I/O
User Guide

This manual is revision C

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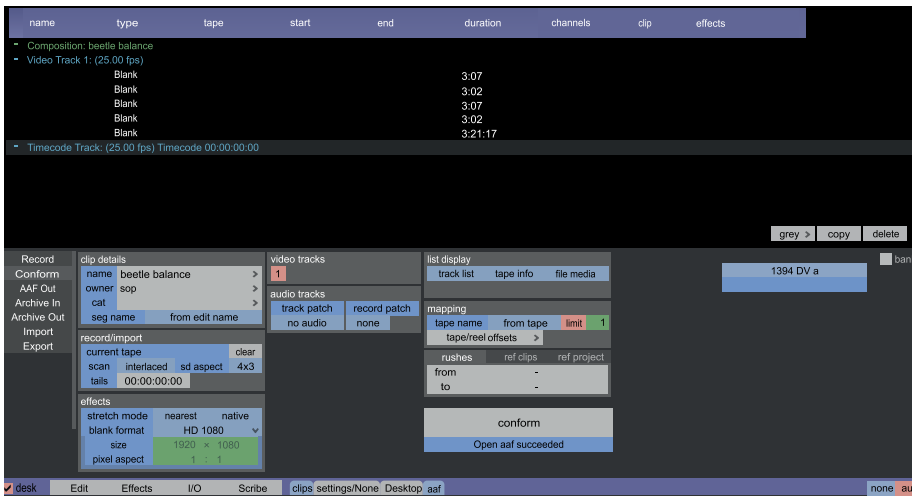
Using I/O

Overview

The I/O application is used to transfer material in and out of Quantel workspace. To access the application, launch the Quantel kernel via the shortcut on the desktop and then press **I/O** on the Application Bar at the bottom of the screen.

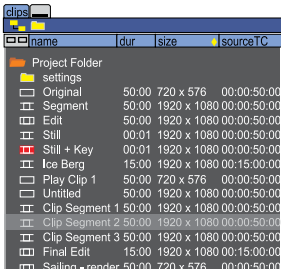


The menu area above the Application Bar provides **Record**, **Play**, **Conform** (see screen shot), **AAF Out**, **Archive In**, **Archive Out**, **DCP In**, **DCP Out**, **Import** and **Export** process menus.

The desktop (main window) provides an image area that is used to view clips and to display information about the current I/O process. The menu area below the desktop provides set-up options applicable to the current I/O process (eg size and format etc).

Access Media and Settings

Bins



When working within I/O, media and settings are accessed by opening and viewing 'bins'. Drag and drop files from bins onto the main window or menu area.

To open a bin, press on the corresponding tab on the Application Bar, for example press **clips** to open the Clips Bin. Open bins display blue on the Application Bar.

The bins available depend on the current process and are described throughout this User Guide where applicable.

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‘Desktop’ Bin

The ‘Desktop’ Bin can be used to access media that is not held in Quantel workspace via the platform’s network directories.

The ‘Desktop’ bin is automatically given the name of the current directory path selected, eg ‘**desktop**’. When the bin is not showing the complete path, use the yellow arrow on the bar at the top of the bin to move up a level. To see previously accessed paths, select the Bin name, and press on the down arrow on the top-right of the soft keyboard.

Files from the ‘Desktop’ Bin can be imported by dragging and dropping them onto the desktop which displays a pop-up (see screen shot).

From the pop-up, add a name, configure the frame rate, scan, repeat, size, and pixel aspect. Set the options required, then press **import**. A Floating Clip now displays on the desktop.

See ‘Desktop Editing User Guide’ for more details about the Desktop Bin.

AAF Bin

The AAF Bin supports AAF, EDL, NCL and TXT files. Drag and drop a file from this bin to convert it to AAF.

See “Conform Offline Material” on page 3-2.

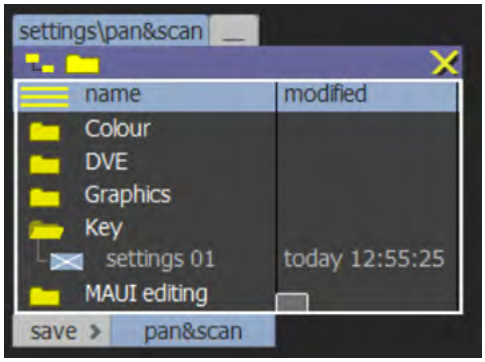
Archive Bin

The Archive Bin displays any archived material that can be restored into Quantel workspace.

See “Archive In” on page 4-6.

Settings Bin

Although the Settings Bin does not manage media itself, it is used to transfer, import and export parameters between projects.



The settings that can be saved depend on the current application and menu, eg MLT FX has different Settings Bin options to Edit or Scribe.

A saved setting has a bin icon that is blue with a white cross.

A saved setting is also saved into the Clips Bin.

See MLT FX User Guide and Editing User Guides for more details of using settings.

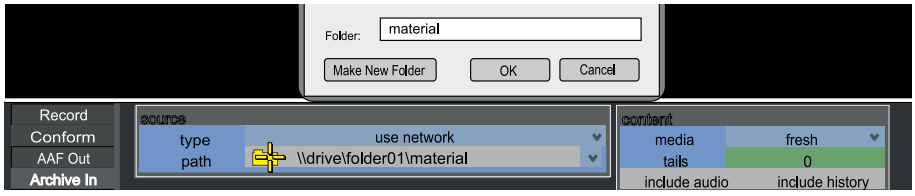
Access Files from the Windows Browser

As well as being able to drag and drop files and sequences from Quantel bins onto the Quantel desktop or menu area, files can also be dragged directly from the Windows directory browser.

Open the Windows browser in either of two ways:

- Press the Windows <Start> key on the keyboard.
- Where there is a folder icon in the Quantel menu area, hold down <Ctrl> and press the folder icon.

Select a file or directory, press **OK** and it transfers to the directory field in the Quantel menu area.



For details of how to use bins including P2, XDCAM and QShare Bins, see Media Bins User Guide.

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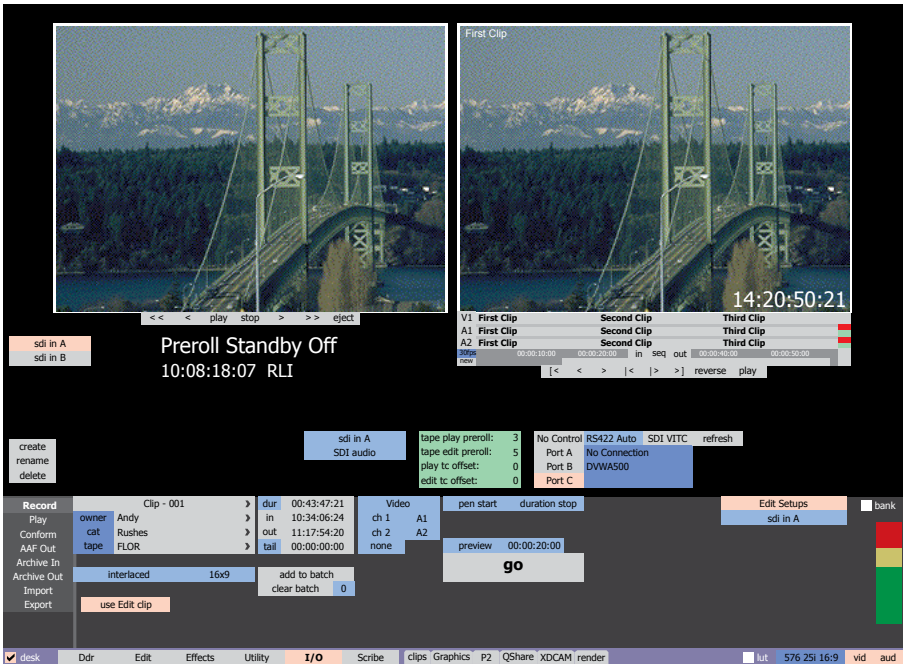
Record and Play-out

Record Material

Device Set-up and Selection

Source material is recorded and saved into the local Clips Bin where it then becomes available to other applications for editing and processing.



Before recording material into local workspace, configure a device set-up in order to set the appropriate video, audio and control connections.

Select the appropriate device set-up from the Record menu or select the Edit Set-ups box to create a new set-up or modify an existing one.

Edit Set-ups

Device Settings

The comms ports and video inputs can be configured and saved as device settings and used within the **Record**, **Play** and **Conform** menus. Up to eight device set-ups can be stored and easily selected by using the scroll box in the menu. Device set-ups can be used to store VTR and system configurations for each different studio installation or working set-up.

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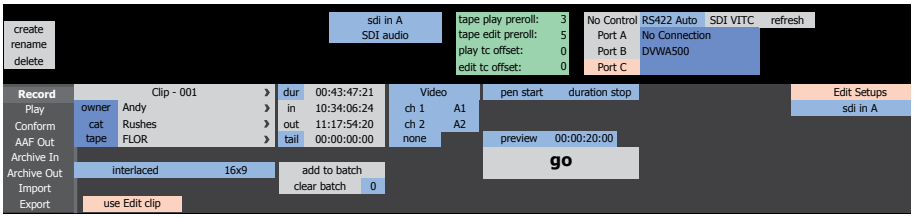
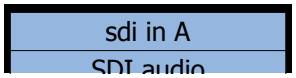


To configure the device set-ups, press **Edit Set-ups** on the right of the menu area. Extra functions display for configuration. The **create** box on the left places a **New Set-up** box on the left side of the desktop and resets the current settings to default. If the settings are changed, they are automatically saved in this new set-up. The **rename** box turns on the soft keyboard from where the **New Set-up** can be given a new title. To remove a selected set-up, press **delete** and **confirm**.

Always select a device set-up name that is easy to recognise in the Record, Play and Conform menus.

Video Input Selection



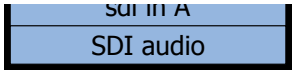
Select the correct video input from the scroll list before starting to record material.

This automatically detects the format of the input video from the corresponding digital video inputs. The names in the scroll list correspond to the connections on the rear panel of the platform.

For 8U iQs Stereo3D media requires both A and B outputs from the VTR to be connected to the same SDI input pair on the workstation, eg **A+B 1-IN** respectively (or alternatively use **A+B 3-IN)**. Select either **sdi 1 in stereo** or **sdi 3 in stereo**, depending on the workstation IN connection.

For Pablo Rio and Qube, Stereo3D media has the A and B inputs as 0 + 1. Pablo Rio supports dual RGB and dual P (1080P). If recording Stereo HD using a 5800 VTR deck, Dual x2(YUV HD x2 realtime) is supported.

SDI or AES/EBU Audio Selection



The two scroll boxes display the available video and audio inputs. Select the inputs that are to be used with device set-up.

The platform can record audio from the following sources:

SDI Audio — The audio recorded is extracted from the SDI input video data.

AES/EBU Audio — The audio recorded is obtained from the AES/EBU audio input connection. The platform's audio is also routed to the AES/EBU audio output connection.

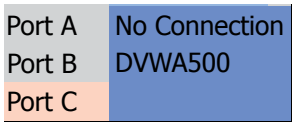
VITC and LTC Selection

The VTR used to record video into the Quantel platform must have identical and synchronised LTC and VITC at all times in order for the Quantel platform to perform correctly. The boxes on the right of the menu allow the appropriate VITC source to be selected.

The blue scroll box (displaying **RS422 VITC**, **RS422 LTC** or **RS422 Auto**) configures the system to use vertical interval timecode or longitudinal timecode from the VTR via the control port.

When the **SDI VITC** is enabled, VITC is obtained from the SDI output. With this box disabled, VITC is obtained from the serial cable.

Select the VTR Comm Port

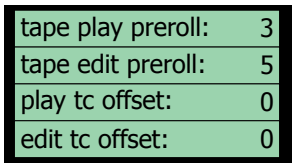


When a VTR is connected to the Quantel platform, its description displays in the blue box corresponding to the port it is connected to ('A', 'B' or 'C' on the serial break out cable). Select the port to assign control of the VTR to the device set-up.

The **No Control** option does not provide VTR transport controls and is intended for crash recording material from the selected video/audio inputs.

When all set-ups are complete, select the **Edit Set-ups** menu again to return to the main menu and select the required set-up from the scroll box next to the audio monitor.

VTR Characteristics



The green boxes allow the Quantel platform to compensate for specific VTR characteristics and delays in the video path. Prerolls can be set for up to six seconds, and the offsets between +/- 10 frames.

The **tape play preroll** specifies the length of time the VTR prerolls before playing.

The **tape edit preroll** specifies the length of time the VTR prerolls before a record to tape starts.

The **play tc start offset** compensates for a specific fixed delay video between the VTR and the Quantel platform when material is stored by the platform.

The **edit tc start offset** compensates for a specific fixed video delay between the Quantel platform and the VTR when playing material out to tape.

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Video Standard Selection

Select the correct input video standard before starting to record material by using the device settings previously configured.

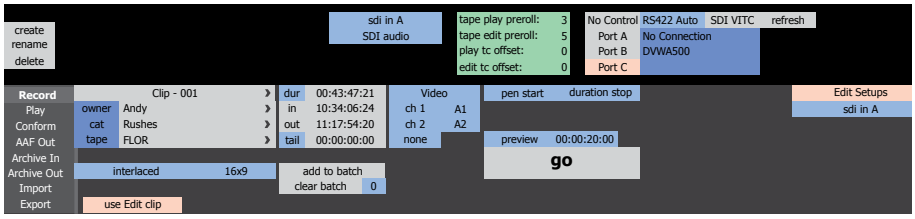
The platform detects the actual aspect ratio, line rate, frame rate, bit depth and colour space from the embedded header information in the data stream. It is then automatically configured to allow the video to be recorded and stored in its native format.

The platform automatically detects and matches the format of the video connected to the input, and determines whether the video needs to be **interlaced** or **progressive**. To change this, select either interlaced or progressive from the blue scroll box. This can be useful if the original source material is progressive but is transferred using an interlaced tape format.

The scroll box displaying interlaced or progressive allows material to be marked as 4:3 or 16:9 as it is recorded.

Record Menu

When the required video and audio inputs are selected from the device settings, use the **Record** menu to record material into Quantel workspace.



Automatic Name, Owner and Category

Before recording any material, name the subsequent clip via the name box, ensuring that naming conventions are adopted. The first clip recorded is automatically given this name with the numeric suffix 1, and subsequent clips increment from 1.

The **owner** and **cat** (category) boxes can also be set before recording; this automatically sorts the material in the Clips Bin.

Input Audio Channel to Track Assignments

Up to 16 channels of audio can be recorded and assigned to internal working tracks.

An sQ server seat has a maximum of 8 audio channels and a workstation has a maximum of 16 audio channels.

The audio channels assigned to these tracks can be edited on the platform (for example, using Edit) and the final output then played-out.

See "Audio Track Output Mapping" on page 2-13.

The platform accepts audio from the embedded audio stream of the SD SDI input or from the embedded audio stream of the HD SDI input. Within each SDI data stream there are 4 groups of 4 audio channels. The platform decodes group 1: audio channels 1, 2, 3 and 4, and group 2: audio channels 5, 6, 7 and 8. Likewise the two groups can be embedded again at output.

AES/EBU digital audio inputs and outputs are provided on some Quantel platforms.

When recording material using the Record menu, assign the required audio tracks such as ch 1 and ch 2, from the VTR to the platform's internal working audio tracks such as A1 and A2.

When any clip is edited in the Edit application, the audio assignments that have been set-up are used.

The internal audio track A1 must be assigned before A2, and likewise audio track A2 must be assigned before A3 etc.

Input Audio Level Indication

The VU meter in the **Record** menu monitors the level of the incoming audio.

Control a VTR

When a VTR is connected and configured correctly, tape transport controls display in the menu (fast rewind, step backwards, play, stop, step forward and fast forward). The controls can be used to find the required segment of video to be recorded.

To shuttle through a clip:

1. Place the cursor in the centre of the Shuttle Active Area: a yellow diamond displays.
2. Press on the diamond and slide the cursor to the right to shuttle forward through the VTR tape. Slide to the left to shuttle backwards through the tape.

   The further the cursor is moved from the centre of the diamond, the faster the shuttle speed is.

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To jog through a clip:

- Place the cursor in the Shuttle Active Area, apply pressure and move the pen in a circular motion clockwise or anti-clockwise.

A timecode box in the menu indicates the current tape timecode. Enter a timecode in this box and the VTR moves to that point on the tape.

When the required in and out timecodes have been established, enter them in the corresponding timecode boxes. The current VTR timecode displays on the menu and can be automatically placed in the in and out timecode boxes.

The **Eject** box next to the transport controls ejects the tape from the VTR.

Set In and Out Timecode

The **in**, **out** and **dur** (duration) timecode boxes are interactive. When entering the in timecode value followed by the out timecode value, the duration value changes accordingly. Likewise, when entering the in timecode value followed by the required duration value, the out timecode value changes accordingly.

There are two modes of timecode entry which are toggled by pressing the <Insert> key on the keyboard:

Overwrite mode	The digits entered overwrite the timecode at the cursor position and the cursor moves right.
Insert mode	On entry of the first digit, the digits to the left are set to zero and subsequent entries shift all digits to the left.

When the in and out timecode values have been set-up, the clip can be recorded. To start recording, press **Start**. To stop the recording process at any point, press **Abort**.

The value in the green **Start Offset** box is used to introduce a fixed advance or delay to the material being recorded. This allows for delays in the video path.

Control Record Start and Stop

Material can be recorded automatically using timecode in and out values or manually using a pen start and pen stop.

The scroll box in the menu displays **tc start** or **pen start** controls when material is recorded:

tc start	Material is recorded when the in timecode value is met. The recording process starts **start** is pressed.
pen start	The material is recorded when the pen is pressed in the image area.
scene select	Clips can be captured from a playing VTR by marking in and out points at the required points. The captured clips can then be saved in the Clips Bin.
picture	Still images can be grabbed from the input and recorded into the Clips Bin or bank.

See “Record Using Scene Select” on page 2-8.

The scroll box in the menu displaying **duration stop** or **pen stop** controls when the recording stops.

duration stop	The recording process stops when the timecode duration is reached.
pen stop	The recording process stops when the pen is pressed in the image area. Without selecting **pen stop**, the recording process stops automatically when the available space is filled.

When the recording process has started the clip immediately becomes available in the library Clips Bin ready for editing or processing.

Record Using Scene Select

To capture clips from a playing VTR:

1. Choose **scene select** from the scroll box (displaying tc start, **pen start** or **scene select**).
2. Press **Start**. Video is only captured from the VTR if it is playing.
3. Press **waiting for in** to mark the current frame being captured as a valid in point.
4. Press **waiting for out** to mark the current frame being captured as a valid out point.

   This process can be repeated as required until all clips have been marked, or when **Stop** is pressed. The process also stops if the record buffer is full (approximately 80% of the total available Clips Bin space).
5. Press Stop to stop the capture. The captured clips are processed and menu boxes determine how the marked material is saved:

take all	Saves the whole record buffer. If **linked** is turned off then the separate clips are saved. If **linked** is turned on then a single clip with markers is saved (including any material between out and in point markers).
take edit	Saves only the material between the marked in and out points (plus tails of length set by the **tails** box). If **linked** is turned off then the separate clips (determined by the marked in and out points) are saved. If **linked** is turned on then a single clip with spliced segments (determined by the marked in and out points) are saved.

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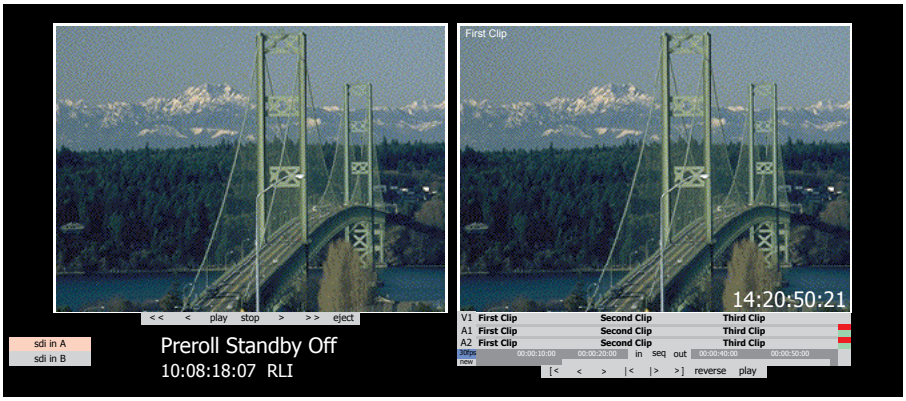
Record Directly to the Timeline

The use **Edit Clip** function (available when a VTR is connected) in the **Record** menu allows material to be recorded directly on to the Edit timeline. Two windows display; the left window shows the current source video and the right window is a view of the Edit timeline.



The VTR can be controlled by using the transport controls underneath the source window.

See “Control a VTR” on page 2-6.

The window on the right shows an actual view of the timeline in the Edit application. A clip must be present on the timeline before the **use Edit Clip** function can be used.

Recorded material from the VTR is inserted either at the current timeline cursor position, or into a segment defined by the in and out points. Material is recorded on to the selected timeline tracks (determined by the filter boxes **V1**, **A1**, **A2** etc).

See the Timeline Editing User Guide for more details on how to use and navigate the timeline.

Press **Go** to preroll the VTR to the start point, play the clip on the timeline and place the newly recorded material on the timeline. The value next to **preview** determines how much of the timeline clip can be viewed before the recording starts.

Batch Record

Use a ‘batch record’ to review and select segments from tape and record those sections at a later time. When a VTR connection is selected, the **add to batch** and **clear batch** boxes are visible in the Record menu.

To add an entry to the batch list:

1. Determine the required range by setting in and out points in the **Record** menu.
2. Enter a clip and tape name, and select the audio tracks required.
3. Press **add to batch**.
4. Repeat to add more entries.

To load the selected material:

1. Navigate to the **Conform** menu; the batch list displays in the Conform load list view.
2. Press **conform** and a prompt to load the first tape displays.

The recorded clips display in the Clips Bin. The **conform** menu reverts to its normal behaviour when an AAF file is dropped into it.

Record Directly into the Bank

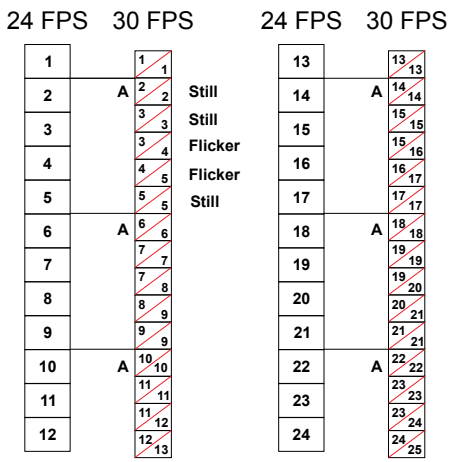
The **bank** box allows clips to be recorded directly into the bank alone.

Grab Stills

The **picture** function under the **pen start** / **tc start** / **scene select** scroll box allows still images to be grabbed from the input (using **Grab**), and saved in the Clips Bin or bank.

Record 3-2 Pull-down Material

Film material shot at 24 frames per second (FPS) can be recorded using different media and techniques. Where film material has been transferred onto 30 FPS video, two out of each five frames in the resultant video contain information from two different film frames. This transfer method is called 3-2 pull-down and can be recognised by the repeating sequence of still and flickering frames.



3-2 pull-down material needs to be converted back to its original 24 FPS format during the record.

To convert 3-2 pull-down material back into 24 FPS material, the correct start point (or 'A-frame') in the frame sequence must be found. The A-frame is locked to the timecode value and an offset can be applied to move the timecode A-frame position to the correct position in the actual 3-2 pull-down sequence.

The 3-2 pull-down boxes are provided to assist in locating A-frames when recording 3-2 pull-down material. These boxes display (below the tape timecode box) whenever 3-2 is enabled and represent the still, still, flicker, flicker, still sequence. One of the boxes turns pink to show where in the five frame sequence the current timecode is allowing for the A-frame offset setting in the <F1> Configuration Window.

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Set up the A-frame Offset

To set-up the A-frame offset for a section of tape to be recorded:

1. Turn on the **3-2** menu, jog to a timecode which is an A-frame and press the **in** box to set the in point.
2. Turn off the **3-2** menu and record a short section of material at 30 FPS.
3. Review the resulting clip and scroll through it to find the A-frame.
4. Increase the offset by the number of frames the A-frame is away from 1.

The value of the A-frame offset is also applied to material played-out. If a segment of video is taken from VTR it is placed back in exactly the same 3-2 pull-down sequence (or cadence).

When editing to a VTR tape, it is essential that the in and out timecode values are at A-frame boundaries. This ensures that the fields of the 3-2 pull-down sequence are placed in their correct positions.

Play-out Material

Play Menu

Any locally saved clip can be dragged from a Clips Bin and then dropped on to the desktop area of the **Play** menu. From here, the clip can be played-out and recorded onto VTR. The **Play** menu is only available when using Quantel platforms.

Output Video Standard

Before playing material, select the correct output video standard. The HD or SD video output, audio output and VTR comm port to be used are selected using a device setting (previously configured) from the scroll boxes on the right of the menu area.

See “Device Set-up and Selection” on page 2-2.

Player Settings

The blue output format box on the right of the Application Bar shows the specific output/play preview format currently being used.

To change the output format regardless of the current locking reference standard, press the box.

A pop-up menu displays the platform’s output types.

The current video output format is highlighted pink. To change a format, use the blue scroll box to the right of an **sdi out** box.

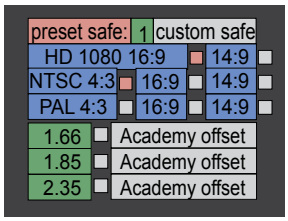
To play-out the clip as a different standard, the Quantel platform automatically changes the resolution of the image and re-shapes any aspect ratio irregularities between the source and target formats (as determined by the <F1> Configuration Window's **Cut** or **Box** selection in the **System – Aspect Conv** menu).

For Stereo3D media, the same resolution and frame rate are used on both active outputs; they are locked together by using the single **sdi stereo out** control.

The left eye plays on the GUI and on the second stereo output both eyes play together. The **split VL/VR** box on a stereo Floating Clip can be used to play-out each eye separately.

Output Crop Settings

The **Safe Area** menu includes static cropping of the main video output. To access the menu, press <Ctrl>+<F3>.



The pre-defined output crop settings in the blue boxes and the green user-definable output crop ratio values (to the left of the menu under the blue boxes) control how much the output image is cropped.

By default the user-definable values are set to three commonly used values which are effectively film camera aperture aspect ratios that define the active area of the film:

35 mm Academy Offset Standard 1.66
35 mm Full Screen Super 1.85
35 mm Academy Offset CinemaScope 2.35

Selecting the small 'enable' box to the right of the crop value box displays blue crop cursors on the image (and output video if **show main** is enabled). Selecting the enable box again turns it red and applies this crop value to the output video if **crop main** is enabled.

An Academy offset crop can also be applied by selecting the **Academy offset** box to the right of the red enable box.

The **show main** box displays the Safe Area box and Crop cursors on the main HD and SD video outputs. The green numeric box to the right of the **show main** box sets the opacity of the image outside of the crop area.

The **crop main** box crops the HD and SD video outputs to match the value of the selected crop (the small box turns red).

Load Material

To select a clip to be played-out, choose a clip from the Clips Bin and drag and drop it onto the VTR window on the desktop. The title of the clip to be played-out displays in the menu area of the I/O application.

See 'Media Bins User Guide' for more details on using bins.

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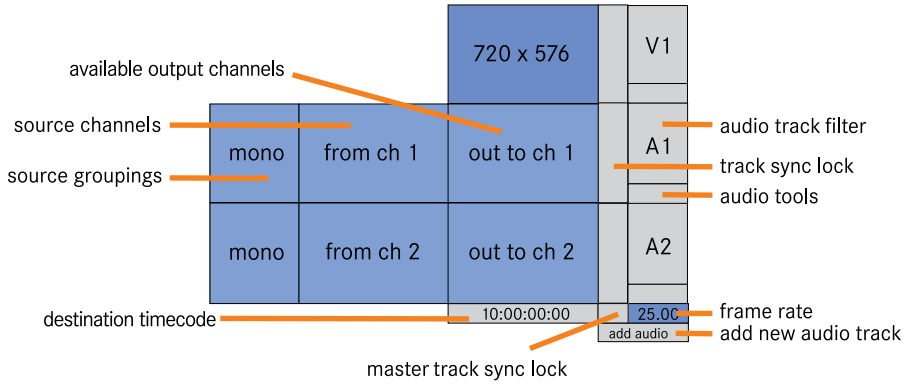
Audio Track Output Mapping

To display the following functions, tick the Audio Channel Selection box in the <F1> Configuration Window's Clips menu.

When clips are edited in the Edit application, the audio assignments set for recording are used. To affect how audio plays-out, audio channels from the source video can be set-up on each track and assigned to specific output channels (ie speakers). This is done via 'hidden' audio input/output boxes. Drag one of the timeline track filters (eg **V1** or **A1**) to the right to display these boxes, which display like this:



The scroll box on the left displays the source grouping of the clip dropped onto the timeline, eg **mono, stereo, quad** etc. This can be changed (where available) by scrolling to a new grouping, eg to split a stereo track out to separate mono tracks select **mono**.

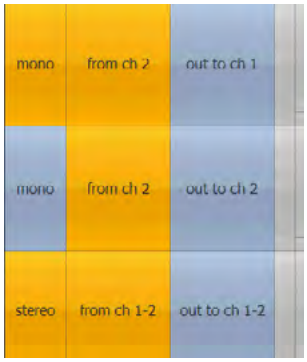
This box may turn orange where the clip has mixed source grouping, so **mono** set in an orange box may indicate for example, a mixed mono/stereo source.

Grouping options are as follows:

mono	an individual audio channel (eg **1, 2, 3, 4** etc)
stereo	a pair of audio channels (eg **1 & 2** or **3 & 4** etc)
quad	a group of 4 audio channels (eg **1, 2, 3 & 4** or **5, 6, 7 & 8** etc)
8 channel	a group of 8 audio channels (eg **1, 2, 3, 4, 5, 6, 7 & 8** or **9, 10, 11, 12, 13, 14, 15 &16**)
16 channel	one group of 16 audio channels (**1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 &16**)

The two scroll boxes to the right control the following:

from ch...	this box displays the available source channels. With no audio segments selected, this setting affects the whole audio track.



Change the 'from ch' setting on an individual segment by double-clicking/lassoing the segment then scrolling to a new setting.

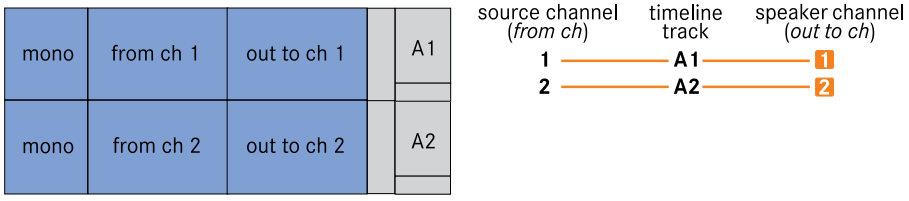
If the timeline audio segments are originally from mixed channel sources, or a segment's source has subsequently been changed, this box turns orange (see screen shot on the left) to indicate that the setting is not global for the whole track.

out to ch... this box displays the available output (ie speaker) channels. The output channel settings made via this box always affect the whole track (ie an individual segment cannot be changed).

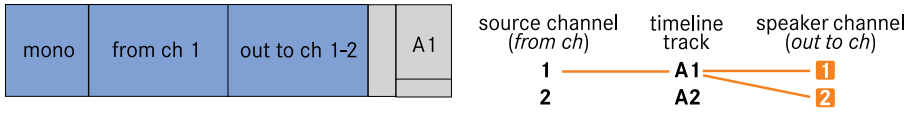
A stereo clip can be split by placing it on the timeline then right-clicking the track box (eg A2) and selecting split audio.

The following examples indicate how channels can be output:

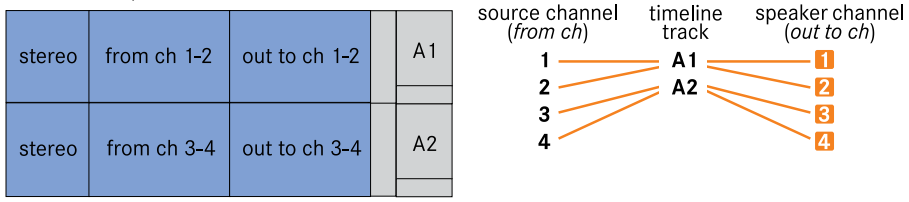
mono example (*this mimics stereo*)



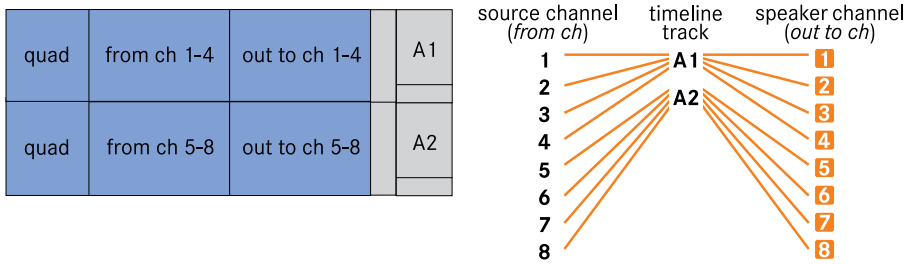
dual mono example (*out to 2 speakers eg for voice over & interview*)



stereo example



quad example



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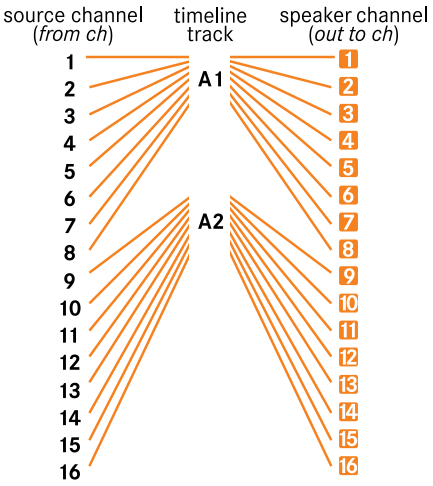
8 channel example*

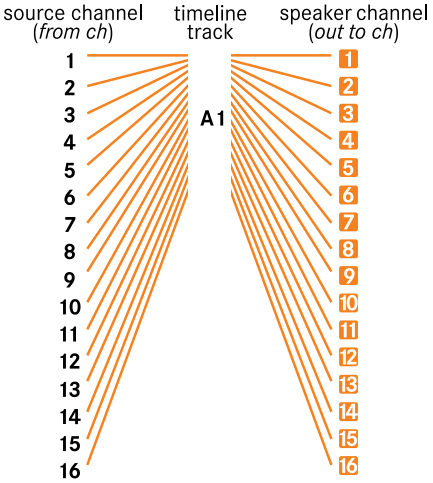
8 ch	from ch 1-8	out to ch 1-8	A1
8 ch	from ch 9-16	out to ch 9-16	A2



16 channel*

16 ch	from ch 1-16	out to ch 1-16	A1

**sQ seats support a maximum of 8 tracks*



Standalone workstations with AVIO3 or eVidIO cards support 16 channels. sQ seats support a maximum of 8 channels (ie the maximum that the sQ Server supports).

mono	from ch 1	out to ch 1-2	A1
mono	from ch 1	out to ch 1-2	A2
mono	from ch 2	out to ch 1	A3
stereo	from ch 1-2	out to ch 1-2	A4

The example shows a typical set-up in a broadcast environment.

In this example, a mono clip of a voice-over is placed on track A1 and an interview placed on A2 (these are both input from channel 1 where the main camera microphones are centrally placed).

The voice-over and interview are then both output to channels 1 and 2 together.

The mono background audio (usually from an offset camera microphone via channel 2) is placed on A3 and output to channel 1. Music input as stereo from channels 1 and 2 is placed on A4 and output to channels 1 and 2.

Too Few/Too Many Channels
Where there are too few track channels for the selected output channels, the most appropriate track channel is automatically duplicated. For example, a mono track output to channels 1 & 2 places the mono channel on both channel 1 and channel 2. If a stereo track is output as a quad (eg channels 1, 2, 3 & 4) then the stereo pair 1 & 2 also display on channels 3 & 4.

Where there are too many track channels for the selected output channels, unused channels are ignored, eg a stereo track output to channel 1 discards the second channel.

Enable/Disable Audio Tracks
Use the track filter boxes (**A1, A2** etc) to enable audio tracks before processing (ie copying, slipping, moving, replacing, etc). When a box is on (ie pink) the corresponding track is affected during processing. If it is off (ie grey) the track remains unaffected. This is useful when performing video-only or audio-only editing.

Play-out to VTR

When a VTR is connected to the system and configured correctly, tape transport controls display in the menu (fast rewind, step backwards, play, stop, step forward and fast forward). These controls can be used to find the required segment of video to be recorded.

Both 'Insert' and 'Assemble' editing can be performed by selecting the appropriate option from the scroll box. 'Insert Edit' mode requires that the VTR tape being recording to is fully striped with contiguous timecode. 'Assemble Edit' mode enables the recording of video onto the end of any existing material already recorded. This removes the need to fully stripe a tape with contiguous timecode before recording onto it.

After the required in and out timecodes have been established, they can be entered in the corresponding timecode boxes. The current VTR timecode displays on the menu and can be automatically placed in the in and out timecode boxes.

The **in**, **out** and **dur** (duration) timecode boxes are interactive. The duration value is automatically determined by the length of clip to be played-out. When entering the in timecode value, the out timecode value changes accordingly.

The **use clip timecode** box sets the in and out timecode values to match those of the clip to be played-out.

After the in and out timecode values have been set-up, press **Start** to play-out onto VTR tape. The VTR window on the desktop shows the clip as it is played-out.

To stop playing-out at any time, press Stop.

The **use resume offset** box allows the clip to be played-out from the defined timecode after the clip's in point. This can be used to continue an aborted play-out without the need to restart the whole process.

When **resume offset** is pressed the timecode box that displays, defines an actual tape timecode allowing playing to resume just before the point at which it failed. Press the set box to enter the current VTR timecode.

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Preview of Play-Out to Tape

To preview a play-out to an existing tape:

1. Check that the monitoring is set-up to show VTR output.
2. Select **preview** in the **Play** menu. At the edit in point, the monitor switches between playback from tape to the new material to be inserted.

Recreate 3-2 Pull-Down Material

When 24 FPS material is played-out at 30 FPS a 3-2 pull-down sequence is applied to the video output (rather than speeding up the frame rate). The **A Frm Offset** value (<F1> Configuration Window - **System** menu) is automatically applied to the sequence.

When inserting a clip segment back onto VTR tape it is essential that the in and out timecode values are at A frame boundaries to ensure that the fields of the 3-2 pull-down sequence are placed in their correct positions.

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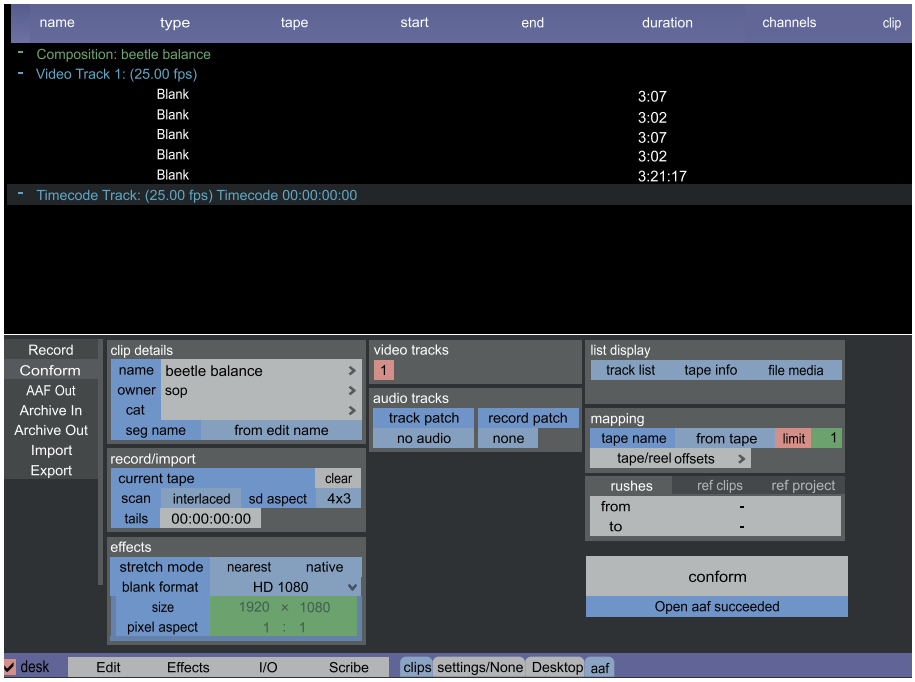
Conform and AAF Out

Conform Offline Material

Conform Menu

The **Conform** menu allows all or any part of the AAF clip list and edit instructions to be used to record material from named tapes or import files from storage devices or network folders directly into the Clips Bin.

Material is automatically assembled into a timeline that can then be used in the Edit application.



When file based media is imported or conformed, the original network location has its own Clips Bin entry that is separate from originator and source timecode.

Advanced Authoring Format (AAF)

Material assembled offline can be conformed via an AAF file, which loads and assembles all required clips and effects information into an edit for final processing.

When multilayer AAF files are conformed (eg Avid and Final Cut Pro), they are interpreted as follows:

- The clips include cuts, dissolves, wipes, stretches and audio fades. Stretches are assumed to be linear.
- AAF Edit Protocol effects including position scale, rotate, corner pins, opacity and text effects can be transferred from Final Cut Pro.

  Other effects' descriptions are displayed in the **Conform** menu, but the effects' parameters are not applied to the clip. For effects within layers that have multiple inputs, for example separate rather than embedded alpha channels, all of the media is loaded but only the first input is used to build the clip.

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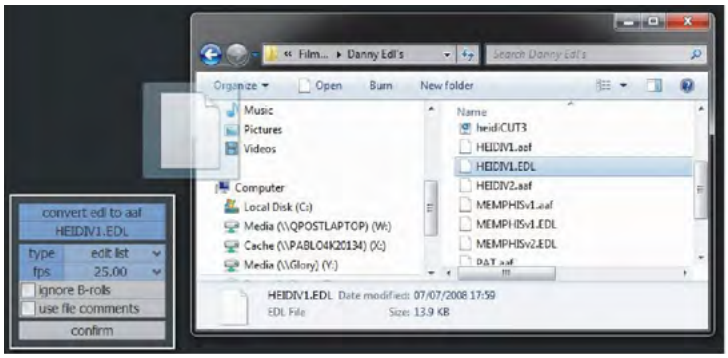
- External file media referenced by filename can be loaded automatically for system supported formats. Take care to avoid requesting tails that are not available in the referenced files.
- Multilayer timelines nested within multilayer timelines are not supported.

Video tracks are all enabled by default; this is indicated by the numbered pink boxes in the **video tracks** menu. If individual video tracks are not required to be a part of the conform process, press on the required numbered boxes to disable them (they turn grey).

Select an AAF File

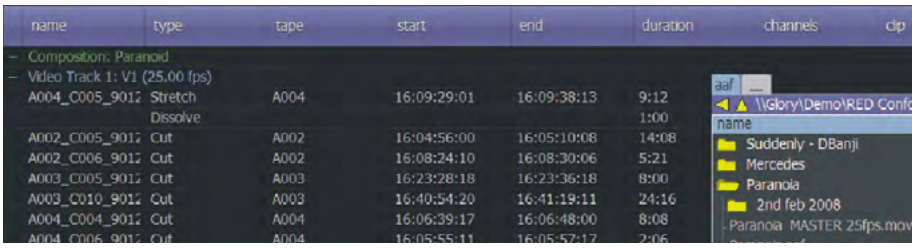
To view and select an AAF file:

1. Select the **Conform** menu, then open the AAF Bin by pressing the **aaf** tab on the Application Bar (this bin supports AAF, EDL and NCL files).
2. Find the AAF file from the bin or Windows browser, then drag and drop it into the Conform window. If an EDL or NCL file is dragged, a conversion to AAF is required as indicated by the pop-up that displays. Press **confirm** to convert it to an AAF.



3. Check that **'open aaf succeeded'** displays under the **conform** box.

The content of the AAF file displays in the desktop area as a clip list, with source details such as file, tape, reel name, effect type, start frame, end frame and duration etc. The display can be changed by selecting the options in the **list display** menu.



Place the cursor on the list and drag up or down to scroll through the list, and drag left or right on column borders to increase the display width. To select a 'group' of entries together in the list, press on the first item, hold the <Shift> key and then press on the last item; all clips in between are also selected. Alternatively, hold the <Ctrl> key to select multiple individual items.

Before pressing the **conform** box, set the following options:

Name, Owner, Category and Seg Name

The **clip details** menu allows additional metadata to be entered. The **name** box defines the name to be assigned to the conformed clip. Use the keyboard to type in the title or edit an existing one.

The **owner** and **cat** (category) boxes can also be set prior to recording material into Quantel workspace and then automatically sort the material in the Clips Bin.

The **seg name** scroll box is used to specify how segments in the conformed clip are named. Select either **from edit name** (to use the segment number/name from the AAF file); **from rush name** (to use the name of the rush clip used to make that segment); or **edit + rush name** (to use the edit name followed by the rush name).

Interlaced or Progressive Material

As in the **record/import** menu, the **scan** scroll box displaying **interlaced** or **progressive** allows material to be recorded in the required format. This is important if progressive material has been recorded using an interlaced tape medium.

Tail Length

As in the **record/import** menu, the **tails** box determines the number of frames of additional tails that are recorded with every clip. For example, a value of 25 adds 25 frames to the start and end of each clip.

M2 Command Stretch Method

The M2 command stretch method can be selected. The type of stretch is determined by the following scroll boxes in the **effects – stretch mode** menu:

The scroll box displaying **native**, **field** or **frame** controls whether the stretch is field-based or frame-based. If **native** is selected, the format is the same as the material being conformed.

When stretching a clip, the interpolation process is controlled by selecting the scroll box displaying **interp** (interpolate), **nearest** or **replicate**. With **interp** selected, any new fields/frames are created by interpolating the nearest adjacent fields/frames. With **nearest** selected, instead of creating new fields or frame where they are needed, the nearest existing field or frame is repeated. With **replicate** selected, if a new field or frame is required the last one is repeated.

Blank Format (Text Effects)

The **blank format** box is used when conforming an AAF file containing text effects (as there is no actual video input). A 'picture' shape needs to be specified in which the text needs to be rendered so that it displays correctly positioned and sized. The **custom** option enables the **size** and **pixel aspect** boxes.

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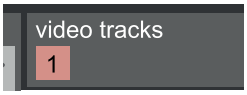
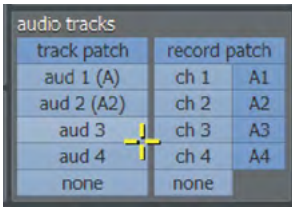
Video Track Control



The **video tracks** menu indicates the number of video tracks in the AAF, displayed in boxes as **1, 2, 3, 4** etc.

By default all video tracks are enabled (coloured pink). To exclude a video track from the conform press on a number box to disable it (it turns grey). If all video tracks are disabled, only audio is conformed.

Assign Audio Channels to Tracks



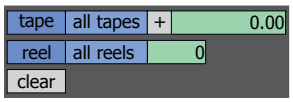
The **audio tracks** menu allows the audio channels defined by the AAF File to be manually patched to specific audio tracks within the system.

Tape Name and Limit

The **mapping** menu's **tape name** scroll box determines the content of the **tape** column in the conform window, therefore affecting which rushes are used to make the conformed clip. Select either **from tape** (AAF tape name); **from edit name** (segment number/name from AAF file); or **from cam roll** (AAF camera roll required for some Avid conforms).

A **limit** value can be entered for any of the **tape name** options described above. This value limits the comparison of the AAF information to a specific number of characters. For example, with a RED (r3d) file conform, select **from edit name** to use the file name information stored in the AAF edit name (as the AAF file's tape name information is useless). However, any suffix and file extension should be ignored so that the AAF edit name matches the originator of the RED file. Do this by specifying a **limit** value (usually 9 or 16 for RED files) to limit comparison of the AAF edit name and file originator.

Offset Timecode



The **mapping** menu's **tape/reel offsets** box displays a pop-up menu which allows the AAF timecode of tapes and reels to be offset to match the actual timecode of dubbed tapes.

To apply an offset timecode:

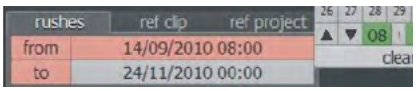
1. To the right of **tape** on the pop-up, select which tape to apply the offset to from the scroll box. Enter any frame offset values in the green numeric box. Use the + / - box to add or subtract the offset value to the timecode.

2. To the right of **reel** on the pop-up, select which reel to apply the offset to. Enter any positive or negative frame values in the green numeric box.

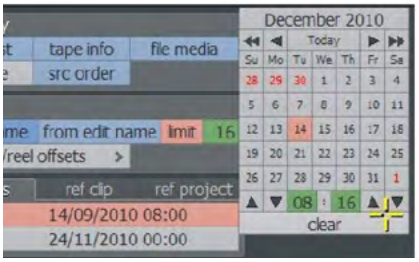
To clear any offset, press **clear**.

To close the pop-up menu, select the **tape/reel offsets** box again. If an offset value has been entered, this box turns orange.

Conform Date and Time Filter



Clips Bin rushes can be selected for conforming using their clip modified date as well as their owner, originator and source timecode.



Select the **rushes** tab followed by the **from** and **to** boxes to enable filtering from/to a specific date. Select the date boxes on the right to display a calendar pop-up, then select a date and time of day. With date filtering, the owner, originator, source timecode and modified date must match in order for a rush clip to be selected.

This only applies to Clips Bin rushes, not the reference clip or reference project. If the date range does not include 'today' any media that is loaded by the conform process is not found and it may repeatedly reload it.

See "Conform Using a Reference Clip" on page 3-14.

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AAF List Display Modes

In the **list display** menu, the blue scroll box displaying **track list**, **load list** or **edit list** changes the display of the AAF content. The column headers at the top of the main window change depending on the selections made:

track list Use the **+** and **-** boxes at the left side of the list display to expand and collapse video and audio track details.

load list Displays the clips to be loaded in tape/reel/file chronological order; this is the order in which the clips are recorded.
Sort this list by selecting **src order** (ordered by source tape name and timecode) or **dst order** (ordered by destination position in the final edit). Usually, it is advisable to use **src order** when loading media from tape so that the tapes are accessed linearly. However, when loading media from files, it is useful to load the media in the order that it displays in the clip, so that work can start on the beginning of the edit as soon as possible.
When **load list - merge** is enabled, the system conforms video and audio from a single source and merges neighbouring ranges. When it is disabled, the platform conforms video and audio from separate video/audio sources and without merging neighbouring ranges.

edit list Displays the clips to be loaded in the form of an edit decision list (EDL). In this mode various aspects of the list can be changed.

Modify AAF Metadata

The following options are available in the menu area, depending on whether **track list**, **load list** or **edit list** is selected. These options do not affect the original AAF file:

grey The **grey** box on the right of the menu area gives access to the **selected** or **all files/all tapes** boxes. The **selected** box allows the currently highlighted section of the AAF to be replaced with grey; and the **all files/all tapes** boxes allow all missing media required by the AAF to be replaced with grey. This can be used if a specific file/tape referred to in the AAF file is not available.

delete The **delete** box on the right of the menu area removes the currently highlighted part of the clip list so that it is not used as part of the conform process.

copy The **copy** box on the right of the menu area copies the currently highlighted part of the clip list to the desktop and discards the original full clip list.

new tape With **edit list - new tape** selected, a new tape is inserted in the AAF list. This can then be used to replace an existing one. The new tape can be given a name and frame rate which is entered into the list when **end** is pressed.

new reel With **edit list - new reel** selected, a new reel is inserted in the AAF list. This can then be used to replace an existing one. The new reel can be given a name, frame rate, film format and film stock details which are entered into the list when **end** is pressed.

Set Tape, File or Network Conform

In the **list display** menu, the scroll box displaying **file info/tape info/film info** and the box to the right displaying **tape media/file media** should be set depending on the type of conform to be undertaken. These options affect the menu options that display when **Conform** is pressed.

With a tape conform, material is loaded directly from named tapes. Select **tape info** and **tape media** from the scroll boxes.

With a file conform, material is loaded directly from the local drive or any physically attached storage drives/devices. Select **file info** from the first scroll box. This option uses the file path information in the AAF file to locate each file. The file name must match the AAF but the location may be different. Identify where the first file is, then I/O can locate other files in this directory automatically.

With a network conform, material is loaded from network folders directly into the Clips Bin. Select **tape info** and **file media**. This option uses the tape information in the AAF file to locate the files regardless of file name. All the files in a directory are searched in order to find files with the appropriate originator and timecode.

To undertake a network conform using NCL or AAF files that contain keycode information, select **film info** from the first scroll box. Media is now selected based on keycode rather than tape name/timecode or file name/offset.

See "Start the Conform (network media)" on page 3-11.

Before starting the conform, set a target folder for conformed media by pressing on the clips tab to open the Clips Bin. Now create/ select a destination folder for the conformed media then press set project on the right. The folder now turns orange to indicate that it is the target.

Start the Conform (tape media)

With a tape conform, material is loaded directly from named tapes. Select **tape info** and **tape media** from the scroll boxes in the menu. When **Conform** is pressed, the following menu displays and a prompt to choose the first tape containing material detailed in the AAF file displays.

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Select Tape

The blue 'tape' scroll box on the left allows the source tape to be selected from the list.

Variable Frame Rate

The **variable frame rate** box must be ticked for Panasonic VariCam media so that only the flagged frames from the tape are recorded. For this to function, **Variable Frame Rate Mode** must be ticked in the <F 1> Configuration Window's **System** menu.

Eject Tape

The **eject tape** scroll box is for selecting whether the system ejects the tape automatically, or whether it is to be done manually.

Rush Prefix

The **rush prefix** box allows a prefix to be specified for naming the rush clips that are recorded during the conform process. The rush prefix defaults to **rush** but can be blank.

Rush Name

The **rush name** scroll box allows rushes to be named using **timecode** or **seg name** (the name used in the edit list).

Load Material

To begin loading material from tape, insert the specific tape into the VTR and press **ok**.

This confirms the current menu settings and continues with the conform process. During this process, the clips available in the system are displayed and prompts display for the different tapes listed in the AAF list. When all clips have been loaded, the edit displays in the Clips Bin.

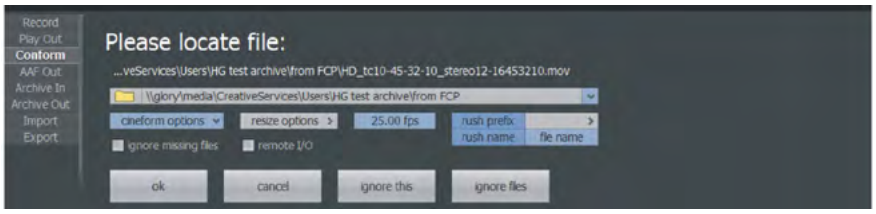
The **cancel** box aborts the conform process.

The **ignore tapes** box continues with the conform process without loading material tape.

The platform loads material from the timecode position defined in the AAF clip list.

Start the Conform (file media)

With a file conform, material is loaded directly from the local drive or any physically attached storage drives/devices. Select **file info** from the scroll box in the menu. When **Conform** is pressed, the following menu displays. This option uses the file path information in the AAF file to locate each file. The file name must match the AAF but the location may be different. Identify where the first file is, then I/O can locate other files in this directory automatically.



Below the 'Please locate file:' prompt, select the required media by either pressing the folder icon then selecting a path (press <Ctrl> + the folder icon to access the Windows directory browser); or by typing a path in the text field; or by pressing the arrow box on the right to select a previously used path.

Most functions in this menu are described in 'network media' conform.

See "Start the Conform (network media)" on page 3-11.

However, this menu also provides the following options:

If ticked, the **ignore missing files** tick box ensures that if a missing file is encountered, user intervention is not required to restart the conform (so the conform process can be left to run unattended).

The **ok** box confims the current menu settings and continues with the conform process by searching for the required material. Check that **'conform succeeded'** displays. Clips are placed in the Clips Bin and display under the **clip** column in the Conform window.

The **cancel** box aborts the conform process.

With a file conform, a list of files that need to be loaded are identified, but one or more of these files may not be available. Pressing **ignore this** skips over the file that is currently displayed. Pressing **ignore files** ignores all remaining files that need to be loaded. Then, either choose to load media by selecting **tape info** or **film info;** or can conform the clip as it is (inserting blank for ignored sections).

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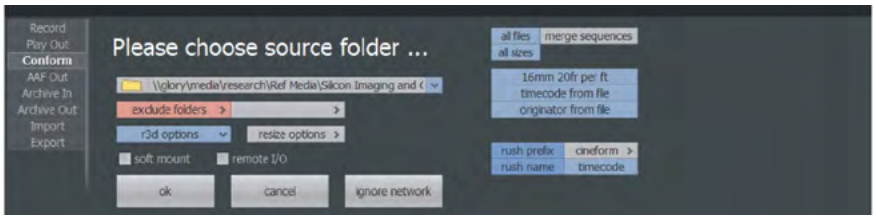
Start the Conform (network media)

With a network conform, material is loaded from network folders directly into the Clips Bin. Select **tape info** and **file media** from the scroll boxes in the menu. Alternatively, to undertake a conform using NCL or AAF files that contain keycode information, select **film info** from the first scroll box to select media based on keycode.

See "Keycode Conform (NCL)" on page 3-14.

When **Conform** is pressed, the following menu displays and prompts to choose the parent folder/directory that contains all the material detailed in the AAF file display.



Select Media

Below the 'Please choose source folder...' prompt, select the required media by either pressing the folder icon then selecting a path (press <Ctrl> + the folder icon to access the Windows directory browser); or by typing a path in the text field; or by pressing the arrow box on the right to select a previously used path.

The media must be held in network folders that represent the tape or film reels referred to in the AAF file. The tape information in the AAF file is used to locate the files regardless of file name. All the files in a directory are searched in order to find files with the appropriate originator and timecode. The system assumes that all media folders are held in a single main folder. Media can also be 'soft-mounted'.

See "Soft Mount Option" on page 3-24.

Specific file types, including RED, CIN, DPX, AVI, MOV etc, can be searched for during the conform process by making a selection from the **all files** scroll box. If **all files** is selected, the filter is disabled and all file types are found.

Merge Sequences

The **merge sequences** box that displays to the right of **all files**, merges sequences that have contiguous timecode/keycode but non-contiguous names, or are from separate folders before they are loaded.

Select Image Size

Files containing a specific image size can be searched for during the conform process by making a selection from the **all sizes** scroll box. With **all sizes** selected, all image sizes are found.

The scroll box below **all sizes** allows the keycode format of the keycode in the file header to be specified, so that the keycode is interpreted correctly.

Timecode From

The 'timecode from' box below the **keycode format** box specifies where the source timecode information is found:

timecode from file reads the timecode from the file header (if present).

timecode from name converts the frame number in the filename into a timecode.

timecode 00:00:00:00 assumes that all rushes start at a zero timecode.

Originator From

The 'originator from' scroll box specifies the location of the material where the originator information is found:

originator from file reads the originator from the file header (if present).

originator from name takes the originator from the file name either with or without its extension (controlled from the **originator with extension** tick box). With Arri Alexa ProRes QuickTime files that have names in the form of A060C001_101006_L1QF.mov that have an offline edl created using this filename, then **originator from file** cannot be used as the originator in the file header is read as A060L1QF (formed by the start and end of the filename). Consequently these cannot be conformed and so the **originator from name** (ie the file name) needs to be used.

originator from folder uses the folder name as the originator.

If **originator from folder** is selected, the originator depth value determines how many levels of sub-folders below the selected folder are used to set the originator.

The system assumes that all media folders are held in a single main folder.

Rush Prefix

The **rush prefix** box allows a prefix to be specified for naming the rush clips that are recorded during the conform process. The rush prefix defaults to **rush** but can be blank.

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Rush Name

The **rush name** box allows the rushes to be named using **timecode**, **seg name** (the name used in the edit list)**, file root**, or **folder** which includes the **rush name depth** value determining how many levels of sub-folders below the selected folder is used to set the rush name. The **file root** selection was previously used for removing number suffixes from file sequences (eg DPX etc), so that the resulting rush name was the same as the file root. However, with frequent conforms from RED and Cineform (MOV and AVI) files and as these are no longer 'sequences', the full file name is required to be the rush name. The trailing number and ' '/'.'/'-'/'_' are only removed from the file name if the file is from a sequence (eg DPX not RED). So A002_C006_901226_001.R3D are named A002_C006_901226_001 (not A002_C006_901226).

Exclude Folders

The **exclude folders** box allows folders that contain the specified text in the folder name to be specified and ignored from the search. This is useful if film has been re-scanned into a duplicate folder that can then be ignored during the search.

Display Options

Select the 'options' box, and a format, to display a pop-up to enter decode options for this format; these vary depending on the format. When conforming using QuickTime files, an **ignore matte** tick box displays when **mov options** is selected.

The **resize options** function allows any file type to be resized to either a list of presets or a **custom** size (4K is the largest 'canvas' size that is supported for processing on a Quantel workstation). The resize function is also available in the pop-up **import** menu when a clip is dropped from a bin onto the desktop.

The **fps** scroll box (to the right of **resize options**) determines how file sequences are interpreted, eg a sequence of dpx files may either be interpreted at 25/30 or 50/60 FPS. This selector is ignored for files that 'know' their own frame rate.

Tick the **soft mount** box to keep media on third party storage without importing it into Quantel workspace.

See "Soft Mount Option" on page 3-24.

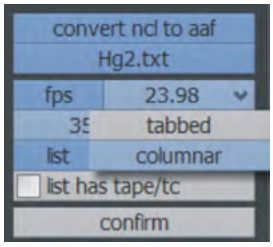
The **ok** box confirms the current menu settings and continues with the conform process. The system searches the parent folder and its sub-directories for the required material. Check that **'conform succeeded'** displays. Clips are placed in the Clips Bin and are displayed under the **clip** column in the Conform window. Soft-mounted clips have yellow timecodes (whereas locally held clips' timecodes are grey). If files are missing, the **clip** column field remains blank; missing files need to be imported from their location.

The **cancel** box aborts the conform process.

The **ignore network** box continues with the conform process without loading material from the current folder.

Keycode Conform (NCL)

Imported media can be conformed into an edit using an NCL file (negative cutting list; created by various products such as Avid FilmScribe) or from AAF files that contain keycode information.



Film material may be scanned and stored on a SAN (storage area network) as a series of Cineon or DPX files with embedded keycode data. An NCL is produced that makes reference to the same keycode as the scanned files. This list may be used to import the necessary files into the system as clips.

1. Navigate to the NCL (or AAF) in the AAF Bin. NCL files have a TXT extension.
2. Drag the NCL from the bin into the main window and on the **convert ncl to aaf** pop-up enter the film format information including frames per second (typically 24.00), film type and perforation spacing. This information is used to determine the correct keycode/film frame relationship of the material. Set either **tabbed** or **columnar** from the **list** box (to match the format used to create the NCL) and if required tick the **list has tape/tc** box (if the NCL contains tape name and timecode columns).
3. Press **confirm** when finished.
4. In the **Conform – list display** menu, select **film info** from the first scroll box to select media based on keycode. Set any other required options.

See "Start the Conform (network media)" on page 3-11.

5. Press **Conform** to build the edit and create a new entry in the Clips Bin.

The keycode conform is only designed to conform data from telecine (with 2-3 pull down turned off) and not for material that has been transferred via tape.

Transitions and segments marked in the NCL as 'optical' are replaced with black in the conformed edit. These can then be replaced as required.

Stretched Clips

If a conform has been performed once and several clips are stretched, then any subsequent conforms requiring the same stretches use the originally stretched rush instead of repeatedly stretching clips.

Conform Using a Reference Clip

The **Conform** menu allows settings from a reference clip to be transferred to a new version of the clip. Additionally, the media from an existing edit can be replaced by newer (eg dustbusted or colour-corrected) media held in a reference project folder in the Clips Bin.

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The transfer of settings currently only applies to single layer effects, for example, colour corrections and DVEs.

Use a Reference Clip/Project for Versioning

1. Drag and drop the AAF file into the **Conform** window. This can be the original AAF used to conform the edit, or a newly created AAF (made from the edit, if any edit points have been moved or if any additional shots have been added since the initial conform).

2. If required, drag and drop the **reference project** folder from the Clips Bin into the **Conform** window. The reference project is the folder that contains the newly loaded media (its path displays under the **ref project** tab and the 'ref project' text now turns orange). To clear the reference project, press clear. Only single segment clips within the reference project with the correct originator and source timecode are used. The source timecode modified flag and owner are ignored for clips in the reference project. Clips within the reference project are used in preference to all other media in the system.

3. If required, drag and drop the **reference clip** from the Clips Bin into the **Conform** window (its name displays under the **ref clip** tab and the 'ref clip' text now turns orange). To clear the reference clip, press **clear**. The reference clip is the existing version of the edit being conformed. This can be used to provide media and settings for the new version of the edit.

   If **rush** is selected from the scroll box, the rushes in the reference clip (including the tails) are available for providing media and/or settings during the conform process. If **seg** is selected then only the media and/or settings that display within the reference clip segments (not the tails) are available during the conform process.

   If the new AAF file has extended any of the segments in the edit, select **rush** so that the tails of the reference clip are available for use. However, if multiple segments in the reference clip use different parts of the same rush then select **seg** to avoid the problems caused by duplicate rushes. If **media** is selected, the media and settings for clip segments that are the same length or shorter are supplied by the reference clip. If **settings** is selected, the settings for all clip segments (whether longer or shorter) are supplied by the reference clip if present.

   If the **dst** box is selected, a reference clip (previously graded sequence with source timecode), with a single destination tape name and timecode is used. When the reference clip is dragged into the window, input the tape name and first frame of destination timecode in the boxes underneath.

See "Use Destination Timecode" on page 3-16.

4 Press **Conform** to start the process.

If media is not available from the reference clip or project, media from the Clips Bin is used (ie single segment clips with correct originator, source timecode and owner). If there are multiple clips with the same originator and source timecode, the 'owner' should be used first to select which clips are to be used. If the required media has not been found, it is requested as part of the conform process.

Only clips with the correct owner and unmodified source timecode are used at this stage (timecodes with a ':' separator rather than a '.' separator, eg '00:00:00.00' not '00.00.00.00').

Use Destination Timecode

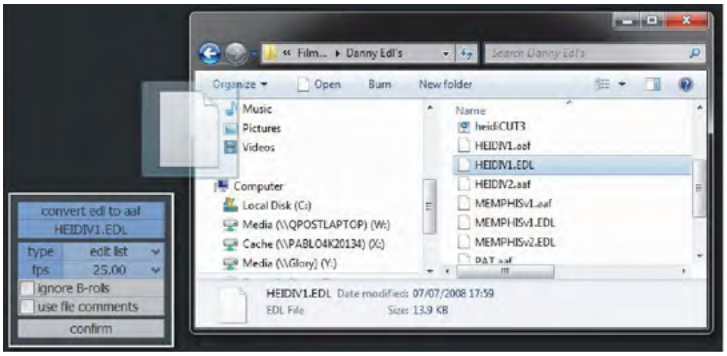
When an edit is output from the system to tape, the resultant tape has the destination timecode instead of the source timecode (or keycode) of the original media. If the tape is used for offline work, an EDL or AAF made by the offline system relates to the destination timecode.

When using the EDL or AAF within the system, the destination timecode is used to pick up the original material from the original edit that was output to tape.

To use this method of conforming, the edit used to make the offline tape must be used as the reference clip. To use the destination timecode as the reference, select **dst** from the scroll box displaying **rush**, **seg** or **dst**.

EDL to AAF Conversion

EDL files (.edl extension) can be converted directly to AAF format (.aaf extension) in the **Conform** menu. Select EDL files for conversion to AAF either from the AAF Bin on the Application Bar or from the Windows directory browser.



Drag an EDL file from the bin or browser out onto the main conform window and the **convert edl to aaf** pop-up displays. Conversion parameters can be set up to match those of the EDL (the EDL file does not contain the specific video format information required to make the appropriate conversion to an AAF). When the set-up is complete, press **confirm** to start the conversion process (or the 'X' in the top right of the pop-up to cancel the process). When complete, the AAF file displays in the AAF Bin with the same name as the original EDL file:

The **type** – **edit list** box converts the EDL to AAF as normal.

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The **type** – **dest cut** box converts the EDL to AAF using just the destination timecodes but disregarding stretches and transitions. This should be selected if the EDL references pre-edited material assembled as a single clip on a single source tape.

The **type** – **dest edit** box converts the EDL to AAF using just the destination timecodes and keeping transitions but disregarding stretches. This is useful for cutting-up a clip that has been laid out to tape to grade across the transitions.

Selecting **fps** allows the frame rate of the EDL to be selected and allows EDLs that have been made at one frame rate, eg where 3-2 has been added or Varicam material used for offline, to be converted to the correct frame rate for online.

The **ignore B-rolls** box if ticked, ignores any material that is held on a B-roll and refers back to the original source.

When **use file comments** is ticked, file (not tape) information is used in the clip name field of an EDL. This is often required when conforming subtitle EDLs. The 'FROM CLIP IS A STILL' comment is read; so only one file is loaded for each event (not the whole sequence of files).

With **type** – **dest cut** or **dest edit** selected, all the tape name entries in the EDL file are changed to 'SOURCE'. The Source TC and Originator ware then used by the system to make references to these clips. To use this option:

1. Record the Clip from tape (usually from 01:00:00:00 or 10:00:00:00) to match the timecode in the EDL/AAF file.

2. In the Clips Bin, select the recorded clip and use the **set originator** function to set the originator to 'SOURCE'. The system now references the recorded clip as both the timecode and the originator match.

3. Press **confirm** to start the conversion process. When complete, the AAF file displays in the AAF Bin with the same name as the original EDL file. When the EDL has been converted to AAF and has been conformed, the recorded clip is cut into segments according to the cutting list.

CDL Information

CDL (Colour Decision List) comments from an EDL can be read and the information converted to AAF (as defined in the AAF Effects Protocol AS-02). The following is an example of the format currently supported:

001 001 V C 00:00:01:04 00:00:01:05 01:00:00:00 01:00:00:01
***ASC_SOP (1.282822 1.279681 1.214705)(0.018875 -0.045064 -0.053974)**
(1.057500 0.934143 0.957396)
***ASC_SAT 1.000000**

These EDLs can be produced by third party grading systems or the information produced manually. The XML, ALE and FLEX CDL formats are not currently supported.

The **Conform** menu reads the CDL information from the AAF file and creates an unrendered MLT FX colour effect (this is not applicable in the Effects application).

The Quantel colour effect that most closely matches the CDL formula is the 'classic' contrast/gamma/brightness effect:

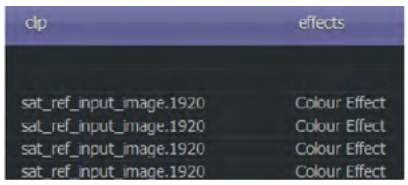
CDL	*Quantel*
slope	**contrast**
offset	**brightness**
power	**gamma**
sat	**saturation**

Contrast/gamma/brightness menu are normally enabled from the <F1> Configuration Window's **Lift/Gain colour** setting. However, when conforming the EDL, the **Lift/Gain colour** setting is ignored (although if a cascade is added to the conformed clip, the new cascade reverts to the current <F1> setting).

The colour effect is tagged as a Quantel contrast/gamma/brightness effect and also a CDL colour effect because there are the following differences between them:

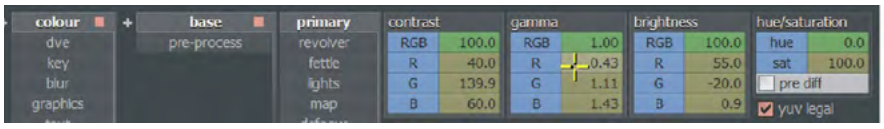
- CDL effects are applied to the raw data values (ie without linearising log data).
- CDL values are clamped to be within the range 0-1.
- CDL saturation is applied after slope/offset/power, not before.

The resultant colour effect has live parameters that can be adjusted in the MLT FX **colour** menu; it is not stored as a cube.



Drag the EDL containing the CDL comments onto the **Conform** desktop and convert it to AAF via the pop-up. The **effects** column should now display **Colour Effect** as in the screen shot on the left.

Set the owner and name etc, then press **Conform**. When the conform has finished, drag and drop the unrendered clip from the Clips Bin onto the timeline in the Edit application.



Open MLT FX then select the **colour** menu. The contrast/gamma/brightness menu should display automatically (regardless of <F1> setting). Any values for contrast, gamma, brightness or saturation have now changed accordingly for each clip segment.

These values can be changed, if required, and/or saved in the Settings Bin to transfer to other media.

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STL to AAF Conversion with Subtitles

Using the **Conform** menu, STL files can be converted to AAF files with subtitles. This means the metadata from the STL file is conformed into a text-only timeline that is ready for layering above the video.

To convert an STL file to an AAF:

1. Locate the .stl file from the media bin and drag it into the **Conform** menu. A pop-up box displays.
2. Set the font type, height, face colour, edge size and colour. (The font height is a percentage based on the effects size in the bottom-left corner of the **Conform** menu (see previous diagram).

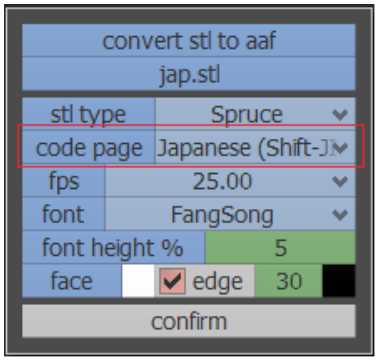
For non-western subtitles, select the appropriate font type in order for the subtitles to display correctly in the conformed clip.

3. Press **confirm**.

The STL file is then conformed with the metadata and displays in the Conform window.

The two main file types that are supported are Spruce and EBU. These are automatically detected. If some of the information is missing from the STL file, the file type may have to be manually specified using the blue scroll box to the right of **stl type**.

For Spruce STL files which are in Unicode (UTF-8 or UTF-16) a **code page** does not need to be selected and can be left as **System default**.

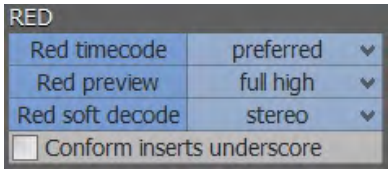


For EBU and 8-bit ANSI STL files that are not in Unicode, select a **code page** from the blue scroll box. Supported code pages include Western European, Japanese (Shift-JIS), Chinese (Simplified), Chinese (Traditional), Korean (Hangul Code), Korean (Johab), Vietnamese, Central European, Cyrillic, Greek, Turkish, Hebrew, Arabic and Baltic.

When using non-western version of Windows, there is no need to select a code page.

RED Conform

Set <F1> Options



RED Timecode

The RED camera records two different timecodes: 'Absolute' code (time of day) and 'Edge' code (which starts from a fixed point for each magazine eg 10:00:00:00).

The **Red timecode** box is set to **preferred** by default. This uses whatever was flagged at the time of shooting. To override this, set to **absolute** or **edge**, if the incorrect code is found in the files.

For Red preview option see "RED Soft Mount Preview" on page 3-25.

Conform Inserts Underscore

Various camera types name their files using the format AxxxCxxx or Axxx_Cxxx. RED file names contain 16 characters whereas EDLs are typically limited to 8-character tape names. Some systems force the RED file name into the EDL tape name by removing the last 7 characters and remaining underscore (eg the RED file A001_C001_1234XY becomes A001C001). To conform an EDL like this, the underscore in the middle of A001C001 needs to be re-inserted.

- Tick the **Conform inserts underscore** tick box to insert an underscore into the RED file name automatically.

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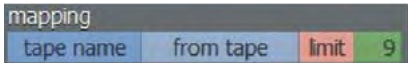


This can then be matched to the RED file names by setting the **Conform** menu's **tape name – limit** box to 9.

This function inserts underscores; it does not replace spaces with underscores (as for Import and Export).

Select the AAF file

- In the **Conform** menu drop the AAF file onto the desktop.

Set the Conform Type

EDLs and AAFs usually reference the RED media using tape name and timecode, so it is possible to do a 'network conform' using this tape name and timecode information. Only referenced parts of the r3d files are loaded.

- In the **list display** menu, select **load list**, **tape info**, **file media.**

The load list selection is not essential, but it is the easiest way to see what is found and imported.

Set Tape/File Name Extraction

1. If the tape/file names need to be extracted from the EDL clip name comment because the EDL tape/file name is not valid, the **tape name – from edit name** box should be selected from the **mapping** menu.

2. Select the **limit** box and enter the appropriate value in the green numeric box next to it – usually 9 or 16, but it can depend on the length of name in the EDL. This allows support for a variety of different offline EDLs and AAFs. Set the **Conform inserts underscore** tick box from the <F1> Configuration Window.

See "Set <F1> Options" on page 3-20.

Set up the Conform

1. Press the large **Conform** box.

2. At the 'Please choose source folder...' prompt, select the folder icon and select the directory that contains all the r3d files. This can be as high up the folder level hierarchy as required, but a 'higher' level selection results in a wider and therefore longer search.

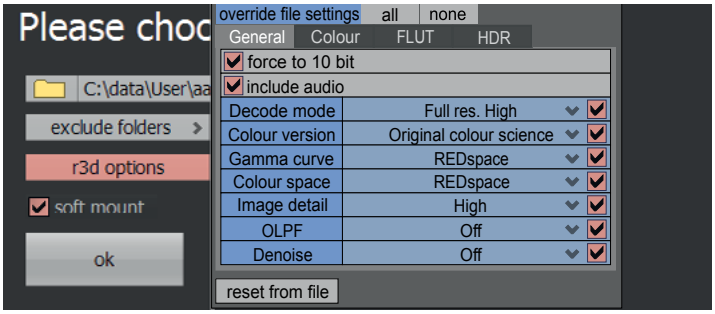
3. In the **all files** blue box, select **r3d** as the filter. If this is not selected, the search process searches for all valid types, and takes longer.

4. Select **timecode from file** and **originator from file** using the blue scroll boxes. Set the **rush name** and the **rush prefix** if required (eg 'Red').

Set General and Colour Options

1 Select **r3d options.** A pop-up displays with **General**, **Colour** and **FLUT** tabs. The settings under the tabs modify the actual image data (ie essence) as it is imported into the system during the conform process which affects the speed. On any tab, with **override file settings** set to **none**, actual file metadata is used so that this information can be transferred as part of the conform for each shot. With **override file settings** set to **all**, the same user-defined settings are applied to all shots that are conformed.

2 If required, select the **General** tab for decoding set-up:



force to 10 bit with this tick box ticked, the image data is truncated to 10-bit as it is imported.

include audio with this tick box ticked, any associated audio with the conform also imported.

Decode mode sets the resolution of the image data (essence) that is decoded as part of the conform. The default setting is **Full res. High** which decodes the full resolution image data. The other settings reduce the size of the image by discarding data: **Full res High** (4096 × 2048); **Half res High** (2048 × 1024); **Half res Medium** (2048 × 1024); **Quarter res Medium** (1024 × 512); **Eighth res Medium** (512 × 256).

Colour version **FLUT colour science** is associated with RED ONE camera firmware build 30. All clips are decoded with this new colour science by default. To use the older colour science for older clips, select **original colour science**.

Gamma curve a gamma curve can be applied to the image. It is set to the setting used at the time of shooting (eg **REDspace, linear, REDlog, REC.709**). This setting can be changed before import, if required.

Colour space this is the colour space to output the image in. It is set to the setting that was used at the time of shooting (eg **REDspace**, **Camera RGB**, **REC.709)**. This setting can be changed before import, if required.

Image detail sets the sharpness of the image. The options are **low**, **medium** or **high** (where the image data is not processed).

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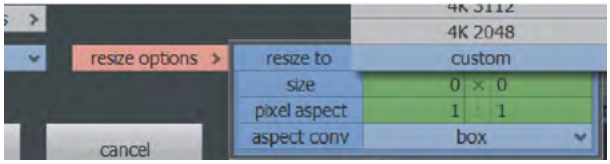
OLPF	(optical low pass filter) sets the focus of the image. The options are **low**, **medium**, **high** and **off** (the default where the image data is not processed).
Denoise	applies a noise filter to the image. The options are **minimal**, **mild**, **medium, strong**, **maximum** and **off** (the default where the image data is not processed).

3 If required, set the parameters in the **Colour** tab which allows a primary grade to be applied to the image data during import as part of the conform.

4 If required, set the **Shadow** and **FLUT** parameters from the **FLUT** tab.

5 If required, set the **HDR Blend** and **HDR Bias** in the **HDR** tab.

Set Resize Options



- Select **resize options** if required.

Choosing an option from the **resize to** scroll box sets the resultant size for the imported image data. The default setting is **same as source file** and with this selected, decoded size images are imported.

There are a range of other formats that can be selected including a custom sizing pop-up (see screen shot), 4K, 2K, HD and SD with different aspect ratios and pixel shapes. With these selected, the resolution of the image is downsized (ie interpolated then resized) using Quantel hardware.

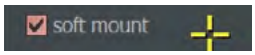
Start the Conform

- Either enable or disable the **soft mount** box, then start the search for files and the conform by selecting the large **ok** box. Check that **'conform succeeded'** displays. Clips are placed in the Clips Bin and are displayed under the **clip** column in the **Conform** window. Soft-mounted clips are displayed with yellow timecodes (whereas locally held clips' timecodes are displayed in grey). If files are missing, the **clip** column field remains blank; missing files need to be imported from their location.

Soft Mount Option

R3D, DPX, P2 and XDCAM media can be soft-mounted. With RED media the timeline and preview functions can also be used.

If required, before starting the conform, the **soft mount** function can be used to enable media to be viewed, edited, conformed and have effects applied to it on third party storage, without having to import media into Quantel workspace. 'Soft-mounting' is an immediate process allowing clip changes to be made and viewed instantly.



The **Import** and **Conform** menus both display a **soft mount** tick box in the left of the menu area.

When the **soft mount** box is ticked, the media is 'soft-mounted' where it is (SAN, NAS, USB drive etc), instead of importing or conforming the media into the Quantel workspace.

Any soft-mounted media is indicated in the Clips Bin with yellow icons and in the **Conform** menu's **clip** column in yellow.

A yellow bar on the Edit or MLT FX timeline indicates where a segment uses remote media. This includes soft-mounted R3D, DPX, P2 and XDCAM media.

In the <F1> Clips menu, this yellow bar can be disabled by deselecting Remote Media Indicator.

Soft-mounted media can be edited, graded etc in MLT FX in the same way as any other media, but it is at preview resolution and not the full render/localise resolution. If soft-mounted media is rendered, only the rendered frames are written to the local workspace. If media needs to be re-edited and its history accessed, the original media needs to be available online or the original rushes localised first.

Media can be localised from the Clips Bin, Floating Clip or timeline. Localised clips display in the Clips Bin with white icons.

The DPX soft mount function does not currently have the lower resolution preview mode that RED has and 2K DPX sequences may not playback in real-time regardless of network bandwidth.

DPX files that have a horizontal resolution not divisible by eight, contain an alpha channel or are not part of a numbered sequence cannot be soft-mounted.

All soft-mounted media can be exported as QuickTime, WMV, or other file sequences without having to localise it first. However if the media has any unrendered history, this must be rendered first before exporting.

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RED Timeline Functions

When RED media is soft-mounted, all the tails are available and the decode settings are available live on the Edit application's timeline by right clicking or pressing <Alt> and tapping with the cursor. Select **r3d settings** from the pop-up. This menu reflects the **r3d options** in the **Import** and **Conform** menus.

By default, only the currently selected timeline segment is adjusted. To adjust multiple segments simultaneously, first draw a lasso over them from top-left to bottom-right (they highlight yellow) or press <Shift> and press on each segment.

The output updates whenever the values are adjusted. However, the **Decode mode** only affects the media resolution and quality when it is either rendered or localised into the Quantel workspace.

A single soft-mounted clip or edit can exist in the library with several different colour settings. The r3d decode mode can be adjusted live on the timeline when effects are applied both in MLT FX and Edit.

This allows for optimal balance between the r3d decode mode and the effects or colour settings applied in MLT FX.

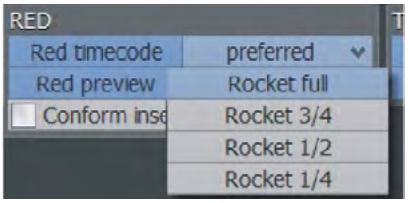
Sizing changes can also be made from the Edit timeline before localisation. Right click or press <Alt> and tap with the cursor, and select **r3d size** from the pop-up.

This menu reflects the **resize options** in the **Import** and **Conform** menus. If no RED Rocket card is installed, these changes are reflected live on the timeline first, whereas if a RED Rocket card is installed, the sizing changes only affect the media after it has been localised.

RED Soft Mount Preview

The <F1> Configuration Window has a **Red preview** scroll box (for playback preview only) which controls playback performance by determining quality versus playability. This menu does not affect how the media is decoded when localised.

WITH RED Rocket Card

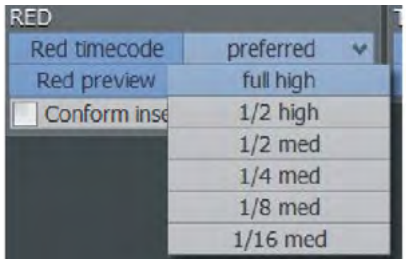


With a RED Rocket card installed, this menu references the sizes based on the current output settings (set from the blue output format box on the bottom-right of the Application Bar) on the workstation.

For example, with the output set to 1920 ×1080 and **Rocket full** selected in the <F1> Configuration Window, the preview images are full HD images. If **Rocket 1/2** is selected, the preview image size is 960 × 540.

These are the image sizes that the RED Rocket card sends to the Quantel platform and are for preview playback only. They do not affect and are not affected by the I/O application's **Decode mode** resolution/sizing settings.

WITHOUT RED Rocket Card



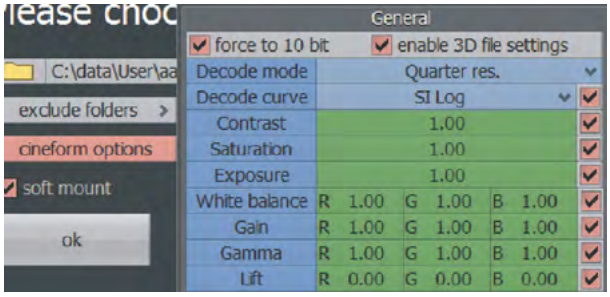
With no RED Rocket card installed, RED media can still be soft mounted and played back in real-time, but at a lower preview resolution.

The **Red preview** setting sets the maximum decode resolution of the RED media that is used for preview.

For example, for 4096 × 2048 media with the decode mode set to half res (2048 × 1024), the **Red preview** set to **1/4 res** and the output size (from the blue box on the bottom-right of the Application Bar) set to HD (1920 × 1080), the media is previewed at quarter res (1024 × 512). If the **Red preview** is then set to **full high**, the media is actually previewed at half res (2048 × 1024), as the preview res is scaled down to match the output size.

SI-2K and Phantom Conform

Silicon Imaging or Phantom camera files can be confirmed in a similar way to the steps described in the 'RED Conform' section. Select **cineform options** or **phantom options** from the scroll box, navigate to the directory that contains all the AVI or MOV files (containing CineForm data) or CINE files (Phantom) and ensure that the relevant format is selected as the filter. Only the part of the file required is decoded.



The **enable 3D file settings** tick box determines whether the 3D settings within a CineForm file are applied when the file is imported (eg horizontal flip of one eye).

The **phantom** (CINE) **options** menu displays the same controls as those in the **Import** menu.

Stereo 3D Conform

It is possible to conform from single HDCAM SR tapes containing stereo rushes to create stereo conformed clips and have modified archive to allow these clips to be archived with 'minimum media' (ie the archive refers to the source tapes).

Stereo segments are created automatically if the corresponding sources are stereo ie Cineform or stereo tape deck.

The edit may be modified before it is archived (eg VL and VR may be swapped on a stereo clip). To allow the minimum archive to work, stereo rushes are now always recorded with a **-VL** or **-VR** suffix appended to the originator of the VL and VR tracks. This is visible on the timeline but hidden in the Clips Bin.

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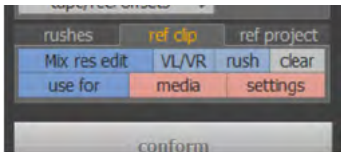
Stereo Reference Clip Options

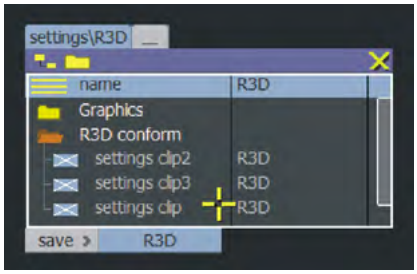


Stereo clips can be used as references during the conform process.

To do this, drag a clip from a bin onto the Conform main window and it is added as a reference into the same area as a mono reference. Then choose whether to use the settings from both eyes or either eye from the **VL/VR** scroll box.

Save Decode Parameters

Settings Bin Functions



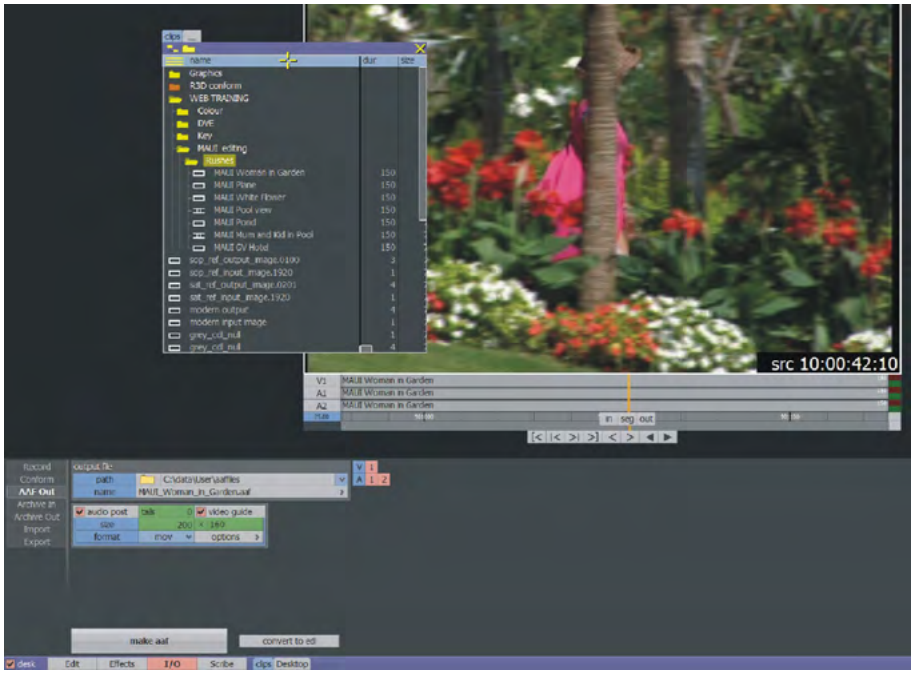
From the **Conform** menu, RED, Phantom (CINE) and Cineform (AVI or MOV) file decode settings can be saved in the Settings Bin. They can then be transported by archiving them with a project. To recall parameters, drag the setting from the bin into the file/network box in the **Conform** menu area.

Output AAF Files

Project Transfer Using AAF

Projects assembled on the system can be transferred to another platform or workspace using an AAF (Advanced Authoring Format) file that references the original source clips.

The AAF file references the original source clips using the originator name and source timecode entered when the material was ingested. This allows any other platform to use the AAF file (or converted EDL) to recreate the edited clip.



When an edit is dragged from the Clips Bin and dropped on the desktop in the **AAF Out** menu, an AAF file can be created for future use or for use by another platform that supports the AAF format.

Create AAF for Existing Clip

To create an AAF file for an existing clip:

1. Select the **AAF Out** menu.
2. Open the Clips Bin then drag and drop the required clip onto the main window area.
3. Select the required destination directory/folder by either pressing the folder icon to open the AAF Bin then select a path (press <Ctrl> + the folder icon to access the Windows directory browser); or by typing a path in the **text** field; or by pressing the arrow box on the right to select a previously used path.
4. Enter the required name for the AAF file in the **name** field.
5. Press **make aaf**. The AAF file is created in the AAF Bin.

The boxes to the right of the blue **video** box determine which video tracks of the selected edit are used to create the resultant AAF file.

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The boxes to the right of the blue **audio** box determine which audio tracks of the selected edit are used to create the resultant AAF file.

AAF to EDL Conversion

The current AAF file can be converted to an EDL file by pressing the **convert to edl** box. Alternatively drag and drop an AAF file from the bin onto the **convert to edl** box.

The pop-up menu displays.

When an AAF file is converted to an EDL, parts of the AAF can be selected or filtered using segment details or tape details.

The **seg name comments** tick box allows the segment names from the AAF file to be included in the EDL as comments. These comments are used to set the segment names if the EDL is converted back to AAF.

When the **source file comments** tick box is ticked, it includes the source file path (if any) of a segment in the EDL. If a segment has an effect on it, the source file path is taken from the base layer of the effect.

The box next to the blue **seg filter** box allows any text (such as a segment name) to be used as a filter. Highlighted names are included in AAF Out segment names if **show highlights** is enabled in the <F 1> Configuration Window. An EDL of only those segments highlighted can be created by entering 'highlight' in the filter field.

The box next to the blue **tape filter** box allows any text (such as a specific tape name) to be used as a filter.

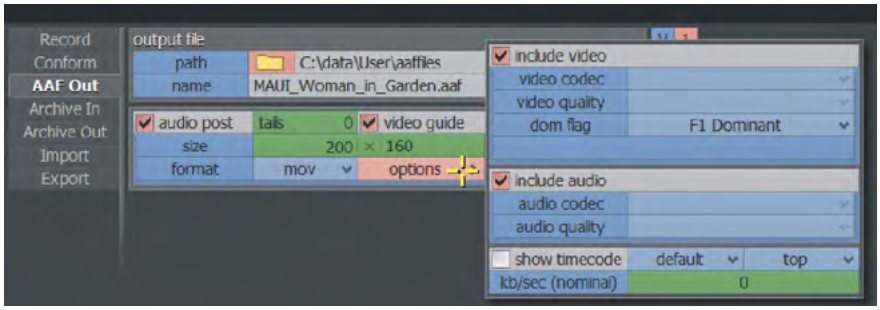
Use the **tape limit** box to specify the maximum number of characters allowed in the EDL tape name. This was previously fixed at eight, but must be greater when creating EDLs from RED material.

Only AAF lines with corresponding **seg filter** and **tape filter** matches are used in the resultant EDL when **confirm** is pressed.

Press **confirm** to action the conversion and create an EDL file using the settings held in the AAF.

Audio Post

The **audio post** tick box displays additional functionality allowing audio segments to be exported as WAV files and an AVI or MOV video guide to be output.



The **video guide** tick box allows the video and audio channels of the clip to be included with the AAF file in the form of an AVI or MOV file.

The value in the green **tails** box defines the extra frames of tails that are included in the exported WAV files in addition to any tails required for fades, dissolves or wipes within an edited clip.

The green **X** and **Y** boxes to the right of the size box determine the video size of the video guide file.

From the scroll box to the right of **format**, select whether the clip is **mov** or **avi**.

To add the video channel to the video guide, tick the **include video** tick box in the options menu.

To add the audio channel to the video guide, tick the **include audio** tick box in the **options** menu.

The scroll boxes to the right of the **video codec** and **audio codec** boxes allow the video/audio to be compressed using any of the codecs installed within the Windows environment.

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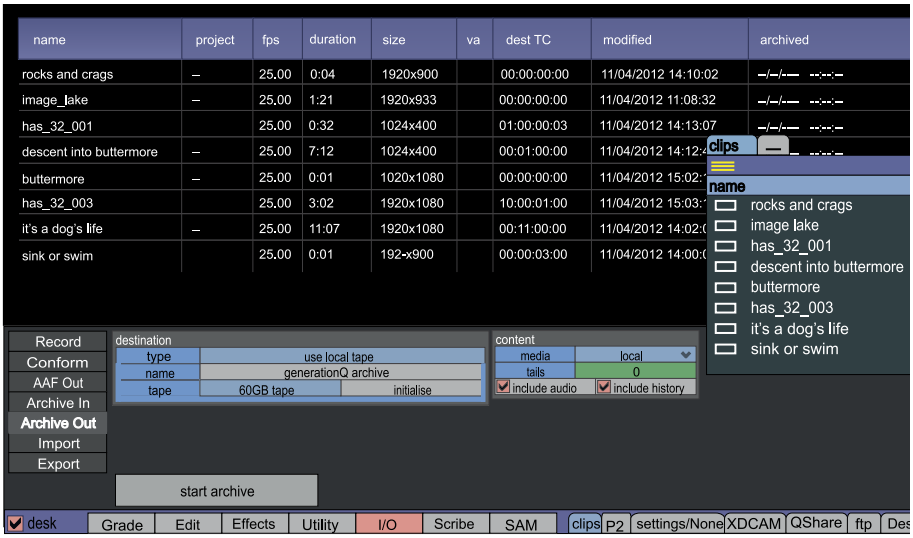
Archive

Overview

The I/O application has two archive functions; ‘Archive In’ and ‘Archive Out’.

Archive Out is used to store Quantel files and projects including all essence and metadata into a data infrastructure. When archiving a file, the original format is retained including resolution, bit-depth, color space and frame rate. Files can be archived out to a specified destination using a network, or a local tape.

Archive In is used to retrieve the Quantel project or files that were stored using Archive Out, and load them in their original format with all the original metadata.



To archive out P2 and XDCAM media it must be localised first.

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Archive Out

Use ‘Archive Out’ to store files and project into a data infrastructure. All the essence and metadata is stored with the files and this can later be retrieved in the original format by using Archive In.

See “Archive In” on page 4-6.

When a new archive is made into an existing archive folder the contents of the latest metadata folder is taken into account (any essence already archived is not re-transferred unless it has been modified), and a new metadata folder is created that contains both the original archive and the new archive.

The clips to be archived display in a list on the desktop with clip information displayed in several columns.

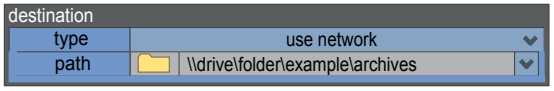
Prepare an Archive Out

Before archiving out a clip, consider the following settings:

Archive Destination

Files can be stored in different types of destinations by changing the settings in the **destination** menu. Select **use network** or **use local tape** from the **type** scroll box.

Selecting **use network** allows files to be stored on a data server that uses Hierarchical Storage Management (HSM) in any visible folder on the network. This provides quick and easy access.

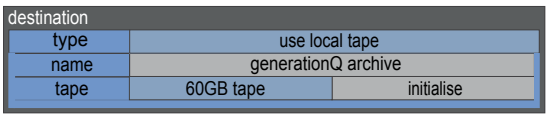


A destination path can be entered by any of the following methods:

- Press on the drop-down arrow to select a path that’s been used before.
- Press on the path field and type the path.
- Press on the folder icon to open the ‘Desktop’ Bin and navigate through the folders to find the required destination.

Ensure that the correct access rights are available for the folder chosen to receive the archive. These include the right to create new folders, create files, read files and change their attributes.

Select **use local tape** to store the files onto a data tape drive connected directly to the Quantel platform. Further tape settings display in the **destination** menu.



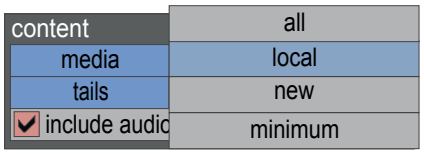
Enter a tape name by pressing on the **name** field and using the hard or soft keyboard to type the name.

Define the size tape by using the **tape** scroll box. To delete any existing data on the tape, press **initialise**.

Before pressing initialise, make sure data on the tape is no longer needed or that it is duplicated elsewhere.

Archive Content

Use the **content** menu to select settings to apply to the files for archiving.



Specify the media to archive using the **media** scroll box.

all	includes AAF information, metadata and all material.
local	includes only local media in the archive and maintains links to external soft-mounted media. This is useful for archiving soft-mounted media between platforms that have the same drive mapping configurations (so links to original sources are retained when archiving back in). If nothing has been rendered, only the metadata (history) is archived out (ie no essence). When the archive is restored, it is assumed that external soft-mounted media is accessible via the same drive mapping configurations. If not, tick the **search for remote media** box in the **Archive In** menu). The **Conform** menu is then used to locate the media using the same mechanism as a 'minimum media' archive.
new	includes AAF information, metadata and only newly created material. The archive links to the original source material.
minimum	includes only AAF information, metadata and unique frames that cannot be reproduced from the original source media. The archive retains links to the original source material.

The **tails** box defines the length of the clip tails that are archived in addition to any tails required for fades, dissolves or wipes within a composite clip.

The **include audio** box determines whether the archive contains audio material.

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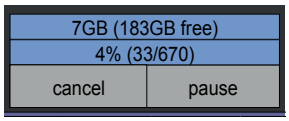
An archive can be created with history or without history. Selecting the **include history** box allows locally held clips to be archived with their effects settings so that they can be restored at a later date for modification. When a file is archived without history (with the **include history box unselected**) it allows clips to be archived as rendered and finished clips.

Perform an Archive Out

To perform an Archive Out:

1. If necessary, clear the list on the desktop by pressing **reset list** on the right of the screen.
2. Drag the required clips or project folders from the Clips Bin and drop them on the desktop.
3. Specify the settings in the **destination** and **content** menus.
4. Press **start archive**.

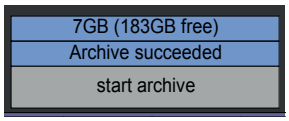
The platform now starts archiving the clips listed on the desktop to the selected destination. Two folders are created in the destination: one for metadata and the other for essence.



During the archive, the progress displays in % complete, and **cancel** and **pause** boxes become available on the menu.

The time taken to complete the archive process depends on:

- The amount of video, audio and metadata to be archived (the platform checks the amount of free video space at the start of the process).
- How much of the video and audio has been archived previously.
- The speed of the network storage device or local data tape drive.

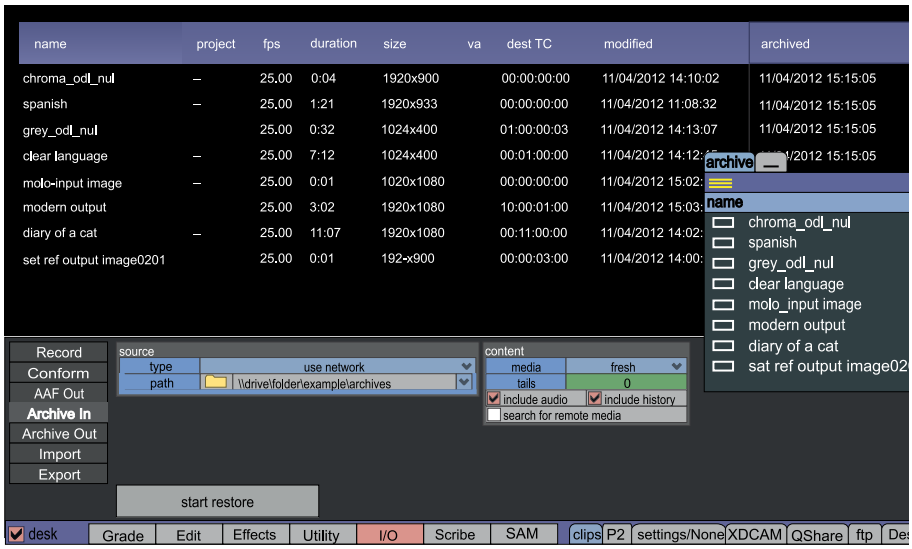


After the archive is complete, **Archive succeeded** displays above the **start archive** box. The total size of the archive displays, with the remaining free space indicated in brackets.

If the archive fails for any reason, the essence data folders contain the data that has been transferred up to the time the archive failed. If the archive is attempted again, the data in these folders is used therefore removing the need to transfer the data again. If the archive is aborted the essence data folders are left unused.

Archive In

The ‘Archive In’ function is used to retrieve and restore files that have been previously archived. The files are retrieved in their original format. Open the Archive Bin to view archived material.



The clips to be restored display in a list on the desktop with clip information displayed in several columns.

Prepare for an Archive In

Before performing an Archive In, consider the following settings:

Location of Archive

Use the **source** menu to select a location to retrieve the archived files from.

Select **use network** to access files that have been archived through a network.

A source path can be entered in any of the following ways:

- press on the drop-down arrow to select a path that’s been used before.
- press on the path field and type the path.
- press on the folder icon to open the ‘Desktop’ Bin and navigate through the folders to find the required destination.

Select **use local tape** to access files from a video tape drive connected directly to the Quantel platform.

Open the Archive Bin (by pressing the **archive** tab on the Application Bar) to select clips previously archived. Press the **refresh archive** or **open archive** boxes on the bin to refresh/display the available clips.

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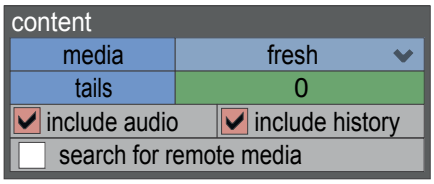
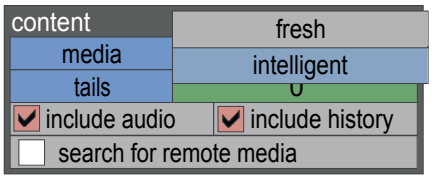
Content to Restore



The **content** menu provides settings that can be applied to files on an Archive In.



Specify the type of media to restore by using the **media** scroll box.

fresh	the restore process reloads all archived material into the system regardless of whether it is already present.
intelligent	the restore process only loads archived material that is not already on the system.

The **tails** box defines the length of additional clip tails that are restored (if additional tails were saved with the archive).

The **include audio** box determines whether the restored archive contains audio material.

An archive can be restored with or without history. Restoring an archived file with history (by selecting the **include history** box) allows archived clips and effects settings to be restored into the local library for reworking. Archiving a clip in without history restores the clip into the Clips Bin as a rendered and finished clip.

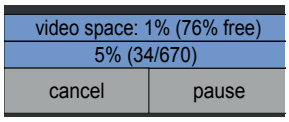
If the media is not located on the same drive, tick the **search for remote media** box to locate the media from other drives.

Perform an Archive In

To perform an Archive In:

1. If necessary, clear the list on the desktop by pressing **reset list** on the right of the screen.
2. Drag archived files from the Archive Bin and drop them onto the desktop area. Press the **refresh archive** or **open archive** boxes on the bin to view the latest clips.
3. Specify the settings in **source** and **content**.
4. Press **start restore**.

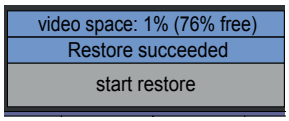
The system starts restoring the selected clips listed on the desktop.



During the restoration, the progress displays in % and **cancel** and **pause** boxes are available on the menu.

The time taken to complete the restoration process depends on:

- the amount of video, audio and metadata to be restored (the system checks the amount of free video space at the start of the process).
- how much of the video and audio is already held in the Clips Bin.
- the speed of the network storage device or local data tape drive.



After the restoration is complete, **Restore succeeded** displays above the **start restore** box.

The total size of the restored file displays, with the remaining free space indicated in brackets.

Soft Mounted Archives

Drag archived clips from the Archive Bin and drop them directly onto the desktop, or into the Clips Bin which soft mounts the archives (indicated by yellow bin icons). The soft-mounted clips can then be loaded onto the Edit timeline (indicated by yellow highlights on each segment) where the clips can be edited and have processes applied to them using MLT FX.

Play-back performance is varied as it depends on network bandwidth and the source disk performance.

Archives can be localised via the desktop, Clips Bin or Edit timeline.

- Mark in and out points on a timeline clip, to localise the selected section only.

Soft-mounted clips with tails cannot be localised.

To modify and resave an archive back to the Archive Bin, the clip must have been originally archived out as **local** media. To resave the modified version back to the Archive Bin, it again needs to be archived out as **local** media on to the same drive letter as the original.

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DCP

Description

Digital Cinema Package (DCP) masters can be imported into the Quantel environment, and can also be created directly without the need for third party hardware or software. Quantel have implemented Fraunhofer's API providing the same functionality as their "easyDCP" standalone software.

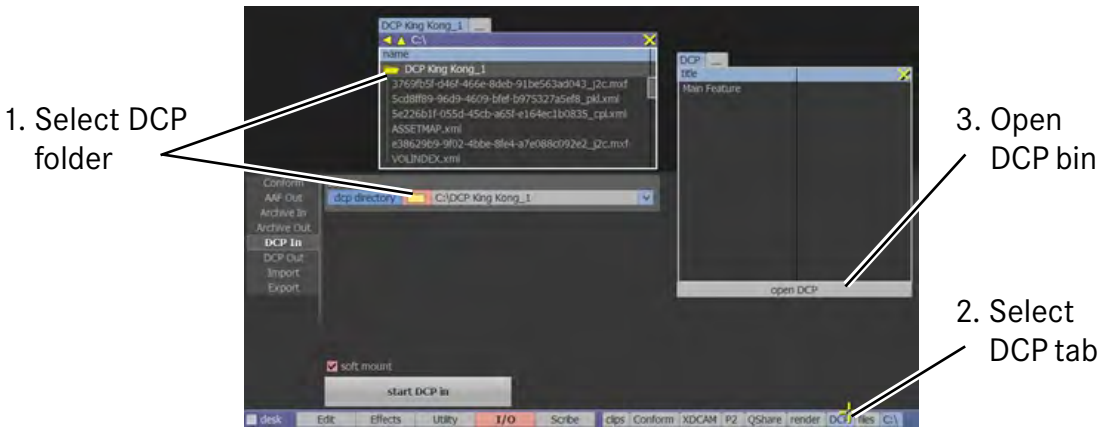
DCP In

Import/Soft-mount a DCP File

A license is required, otherwise media displays at a low resolution after the first few seconds. Automatic licensing is available from within the UI. See "Automatic Licensing" on page 5-6.

- Select the **DCP In** menu.

The menu displays:



1 Navigate to the DCP folder containing the source material.

2 Select the DCP tab at the bottom of the screen.

3 Press **Open DCP** bin, to open the DCP bin containing the composition.

4 Either drag the composition into the workspace, or press **start DCP in**.

To soft-mount media tick the **soft mount** box before importing. The media is 'soft-mounted' from where it is (SAN, NAS, USB drive etc), instead of importing the media into the Quantel workspace.

See "Soft Mount Option" on page 3-24.

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DCP Out

A single composition can be made from one or multiple reels. Encryption can be added to the reels and, if required, there are many encryption types to choose from, each of which create a Key Delivery Message (KDM).

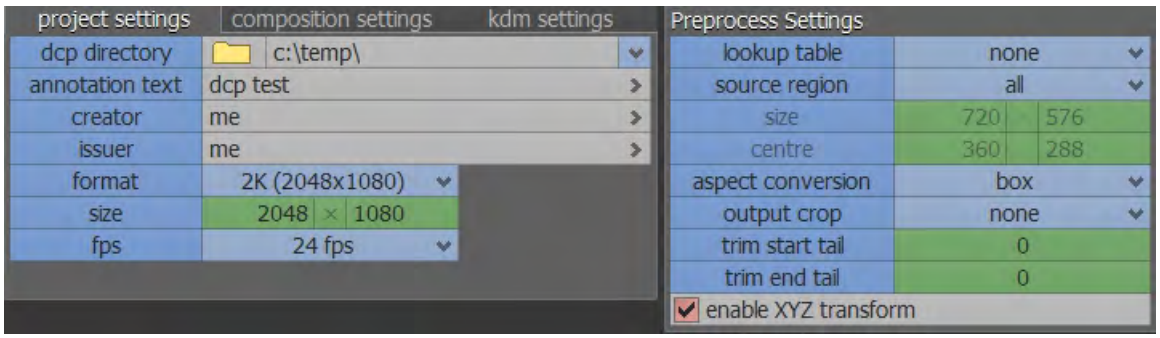
All exports are 12-bit RGB. However, if the standard XYZ transform is not required, lookup tables (LUTs) can be added to the reels on export, via the PreProcess settings. DCPs are created at a maximum bit-rate of 250 Mbit/s. Audio is output at a sample rate of 48 kHz.

A license is required to produce un-watermarked compositions. Automatic licensing is available from within the UI. See “Automatic Licensing” on page 5-6.

Create a DCP Package

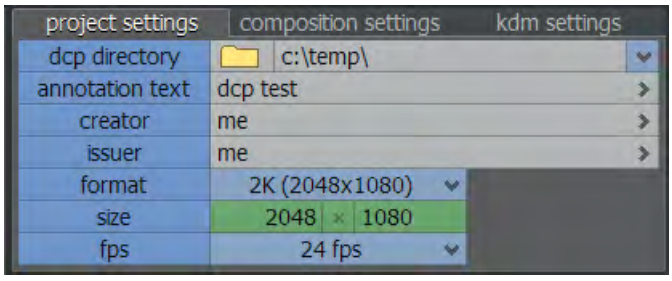
- Select the **DCP Out** menu.

The menu displays:



Define the Format

1 Ensure the **project settings** tab is selected.



2 Define the target path for the resulting DCP package.

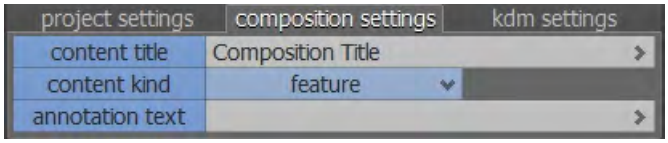
3 Add an **annotation**, **creator** and **issuer**, as required. If none are added, the issuer defaults to the owner from the first clip.

4 Set the **format**, **size** and **fps** according to the output required.

When making changes to the clip size, ensure that the width and height are both divisible by four.

Set the Composition

1 Press on the **composition settings** tab.



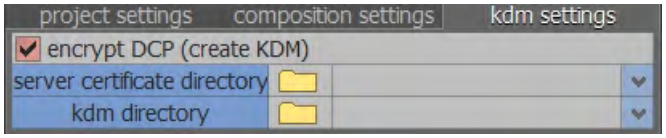
2 Add a suitable title for the composition. If none is added, the composition takes the title from the first clip.

3 From the **content kind** scroll box, determine the kind of composition that is produced. For example, a feature or a trailer.

4 Add further annotation, if required.

Set Encryption

1 Press on the **kdm settings** tab.



2 To add an encryption, tick the **encrypt DCP (create KDM)** tick box. Leave this box unticked if no encryption is required.

3 Set the directory containing the server certificates for this DCP.

4 Define the target directory for where the KDM certificates are to be created. By default this is set to a sub-folder under the DCP package path.

The encryption keys are generated and transmitted via a KDM to the projection site. These keys can only be used by the destination device.

Add Clips

- From the Clips Bin, drag the set of clips that make up the DCP composition, to the desktop. Clips must match the formatting, as defined, otherwise they are not dropped onto the DCP Out menu.

Each DCP package can have a single composition only.
Video-only or audio-only reels are not supported.
Subtitles or closed captions are not supported.

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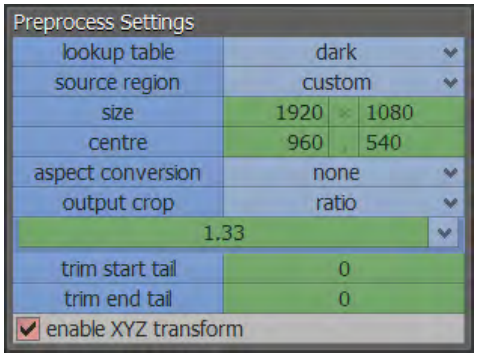
Define the PreProcess Settings

The PreProcess settings give various options for the output files:



1. Select a **lookup table** from the scroll box, if required.
2. The **source region** is set to **all** by default. If a custom region is required, select custom from the scroll box, and define the appropriate size and centre values for the region.
3. **aspect conversion** can be set to **box**, **cut** or **none**. This is of particular use when resolution is not full 2K or 4K. Selecting **box** outputs with black bars either side of the content to fill the screen top to bottom, and **cut** outputs with the top and bottom edges cropped to fill the width of the screen.

The **output crop** box is used to crop each frame to the value set in the green numeric box. This can be set to **picture**, **ratio**, or **none**.
When set to **picture**, define an origin position, and a size (x × y).
When set to **ratio**, choose from the list of commonly used ratio values. Some of these are effectively film camera aperture aspect ratios that define the active area of the film are, and others are television standards:

- 1.33 (4:3) - SD video
- 1.66 - 35 mm Academy Offset Standard
- 1.78 (16:9) - HD video
- 1.85 - 35 mm Full Screen Super
- 2.35 - 35 mm Academy Offset CinemaScope
- 2.37 (21:9) - True ratio 64:27 - often used as a best fit between Cinemascope (2.35) and 35 mm Anamorphic (2.40)

4. Set a number of frames to trim from the start and end using the numeric boxes.
5. If sRGB colour space (default) is not to be used, tick the **enable XYZ transform** tick box.

Generate DCP

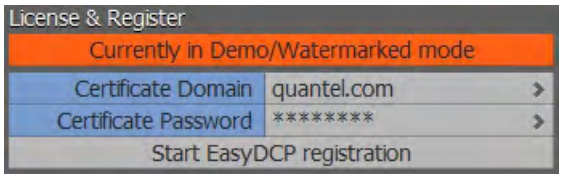
- Once the setup is complete, press **generate dcp** to start the creation of the DCP package.

Progress is indicated by progress bars. At any time during the process, the DCP creation can be aborted by pressing **cancel**.

The resulting DCP package contains MXF files for each DCP reel, an XML file for the DCP composition, and ASSETMAP and VOLUMEMAP files. If encryption was enabled, the KDM directory contains KDM.XML file containing a Key Delivery Message.

Automatic Licensing

If a license has not been previously obtained, the following displays in the menu area.

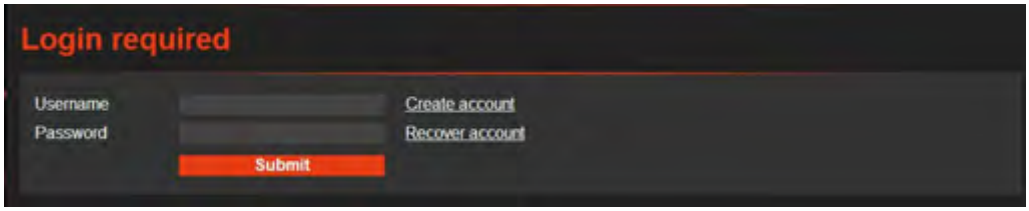


To license and register:

1. Enter a valid domain name (usually that of your company). This is required for the signing of any DCPs created, and to identify where DCPs are created.
2. Supply a password. This is used to create a decryption key.
3. Press on **Start EasyDCP registration**.

The easyDCP website opens in a browser window.

Easy DCP



1. A login is required. If a company account already exists enter the username and password, otherwise click on **Create account**.
2. Enter the details, and click on **save changes**.
3. Enter the username and password as set up on the previous screen, and click on **Submit**.

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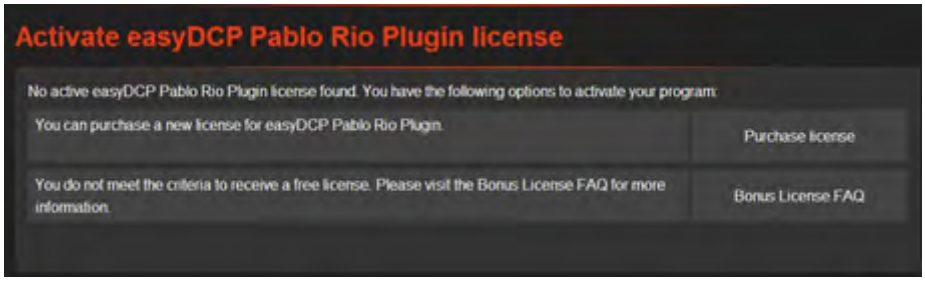
The plug-in options page displays:


Activate easyDCP Pablo Rio Plugin license
No active easyDCP Pablo Rio Plugin license found. You have the following options to activate your program:
You can purchase a new license for easyDCP Pablo Rio Plugin.
Purchase license
You do not meet the criteria to receive a free license. Please visit the Bonus License FAQ for more information.
Bonus License FAQ

4 Click on Purchase license.

easyDCP Pablo Rio Plugin
License price
2.250,00 €
Purchase
easyDCP Pablo Rio Plugin is fully integrated in Quantel Pablo Rio application. It allows to create encrypted also uncrypted with succesfull easyDCP system for projects design with Pablo Rio. Also playback of DCP is possible in Pablo Rio with the integrated easyDCP system.
Select modules:
Pablo Rio Plugin
2,250.00 €
Ausgabe von unverschlüsselten und verschlüsselten 2D/3D DCPs
Wiedergabe von unverschlüsselten und verschlüsselten 2D/3D DCPs
* Reduced price for additional module license

5 Tick the box(es) to select the module(s) for which a license is required, and click on **Purchase**.

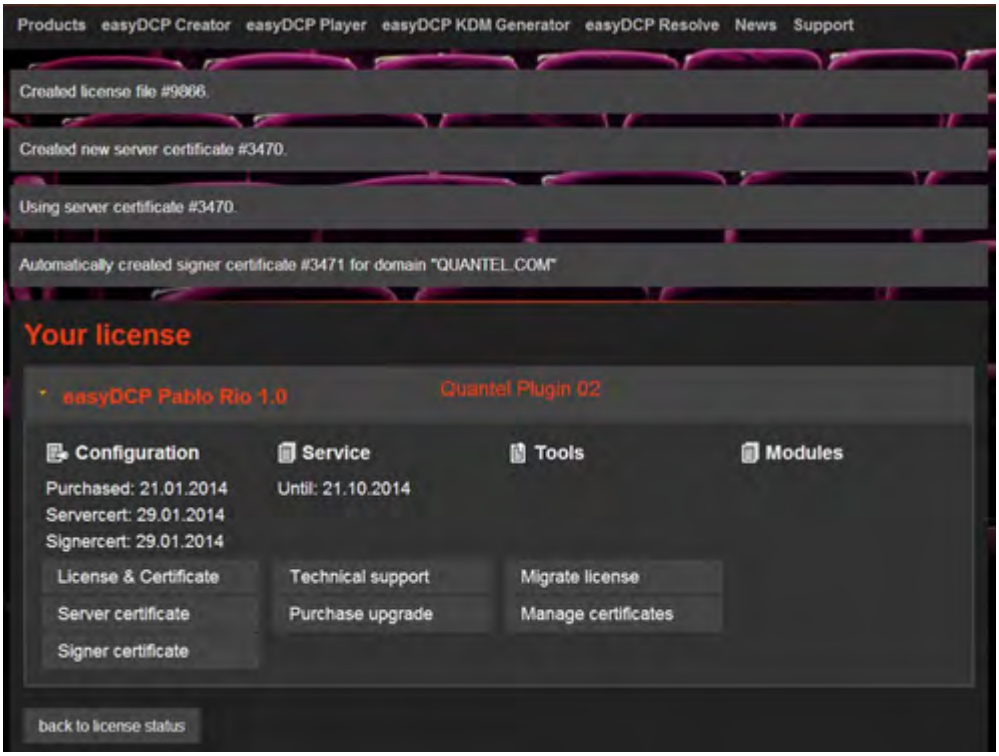
6 Complete the purchase as required.

The licence is downloaded to the PC. An example of a licence filename is: “Quantel_Ltd_easyDCP_Pablo_Rio.easyDCP”

7 Copy the licence to C:\Data\User\DCP.

8 Reboot the software, and go to the DCP Out menu. The signing and encryption certificates are written to the C:\Data\User\DCP\My certificates folder. Once complete, the License & Register box is removed from the display, and any further DCP Outs are no longer watermarked.

If required, the license can be downloaded at any time by logging into EasyDCP from a browser window, and clicking on the License & Certificate tab.



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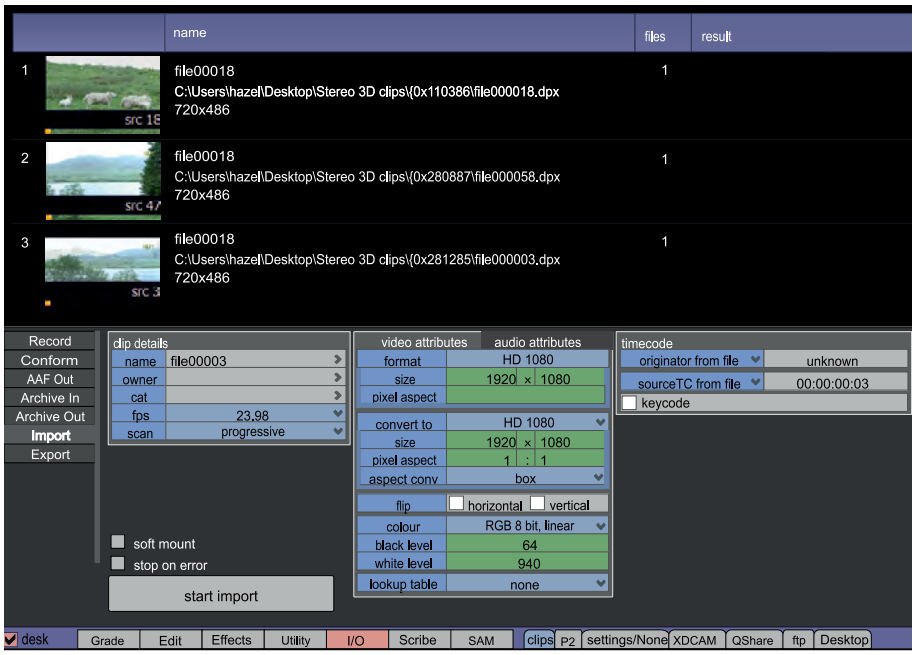
Import and Export

Import Material

Import Clips from Files

The **Import** menu is used to import files as stills or sequentially numbered images to form a video clip in the Clips Bin. All files within a sequence must be the same file type, the same size, the same aspect ratio, the same colour depth and the same resolution.



When file-based media is imported or conformed into Quantel workspace, the original network location has its own Clips Bin entry that is separate from originator and source timecode. When clips or images are selected for import, they display on the desktop area with a preview thumbnail.

The horizontal resolution of all files imported into Quantel hardware must be divisible by 8. In previous versions of software, files were 'padded' on the right hand side when their horizontal resolution was not divisible by 8. Now these types of files are centred having black equally padded to both left and right sides. If the import file is larger than 2K, the horizontal resolution is divisible by 16.

To import a sequentially numbered set of images (for example, clip 001-007) or single clip sequence:

1. Select the **Import** menu.
2. Select a file format as a filter from the **accept** box on the right of the menu area; for example to separate RED and MOV files. Only material of the selected file format is then added to the list.

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3 If required, tick **group stills into sequences**, so that all selected files are placed on the desktop as a single entry and saved in the Clips Bin as a clip.

4 Open the 'Desktop' Bin and select the local or network directory containing the required images (or press the Windows <Start> key to access the Windows browser).

5 Hold down the <Shift> key on the keyboard and highlight the required files.

6 Drag the selected files (or an entire directory) from the bin and drop them in either of the following places:

- The main window where they are listed.
- The menu area, where a pop-up displays. Set any resize options etc, then press **import** to create a Floating Clip or tick **copy to bin** to place the file into the Clips Bin. In the menu area, enter the name for the clip in the name field; the default name is that of the first image selected.

7 Set up any decode and resize options in the menu area. The decode settings for RED, Phantom or Cineform files can be reset to the file import defaults by pressing **reset from file** on the pop-up. The decode settings for soft-mounted RED clips can also be reset from the Edit timeline.

8 To soft-mount media tick the **soft mount** box. The media is 'soft-mounted' from where it is (SAN, NAS, USB drive etc), instead of importing the media into the Quantel workspace.

See "Soft Mount Option" on page 3-24.

9 If required, adjust the **fps** and **scan** settings for the resultant clip and press **start import**. After each file is imported, 'success' displays in the result column. When the **stop on error** box is ticked, all import files are stopped if an error occurs in one and the options **restart**, **continue** and **abort** become available. If the box is not ticked, the options **restart**, **retry** and **abort** become available during import when an error occurs in a file but the import continues with any remaining files.

The media is saved into the Clips Bin with the new clip name and settings from the menu. Any soft-mounted media is indicated with a yellow icon.

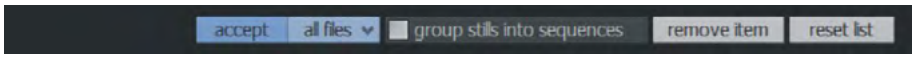
Ignore Matte Option

When dropping a QuickTime file that contains an alpha channel in the **Import** menu, an **ignore matte** tick box displays in the menu area (this is also in the **Conform** menu). This is useful because many QuickTime files appear to have an alpha channel even if they were not created with one, eg ProRes files.

Batch Import

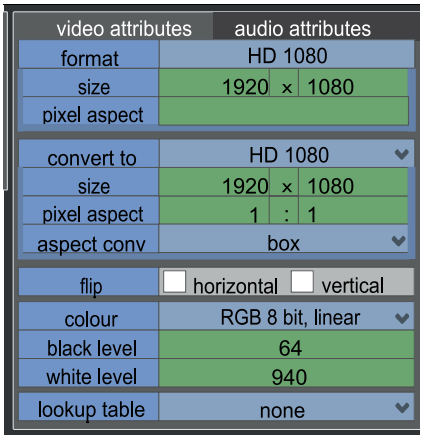
Group Stills into Sequences

Single files or file sequences can be dragged from the 'Desktop' Bin and placed on the desktop in the **Import** menu. Tick **group stills into sequences**, and all selected files are placed on the desktop as a single entry and saved in the Clips Bin as a clip. Any subsequent files dragged out are appended to the first entry if they are dropped over it; if not, a new entry is created. With **group stills into sequences** unticked, the selected files are dropped onto the desktop as individual entries and saved into the Clips Bin as stills.



In both the **Import** and **Export** menus, multiple clips can be selected as a group by using the <Shift> and <Ctrl> keys so that their attributes such as frame rate, export path or file format can be changed at the same time. Only the attributes changed on the active item are rippled through the selection.

Video Attributes Menu



The video attributes menu displays information available from the file. Change the information, if required, to customize the file on import.

The video and audio attribute menus are on different tabs. The video attribute menu displays by default.

The **video attributes** menu displays the following:

Format, Size and Pixel Aspect

The **format** box lists a number of preset frequently used formats, eg SD 486 4:3 or HD 1080. To use a non-standard format, select **custom from the format** drop-down which allows customization of the size and pixel aspect. The **size** box indicates the frame size of the image. The **pixel aspect** box indicates the pixel aspect ratio within the image.

Convert to

The **convert to** box allows all file types to be resized to either a list of presets or a **custom** size on import. Select **same as source** if the file does not need resizing. When **custom** is selected, the **size** and **pixel aspect** boxes become available. There are also options to compress specific file types (eg MpegIMX40 625 4:3).

Images up to 16K can be imported providing they are resized to 4K or less (4K is the largest 'canvas' size that is supported for processing on a Quantel workstation).

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Aspect Ratio Conversion

When a file needs resizing, but the picture aspect ratio doesn't match the new size selected, the **aspect conv** field allows selection of the conversion method (ie **box** or **cut**).

Flip

The image can be flipped either vertically or horizontally on import by selection of the boxes to the right of the **flip** box.

Colour

The box to the right of the **colour** box indicates the video data format colour space and allows change of the indicated content type to **linear**, **log** or **print density**.

If the colour format of the image is YUV, the colour options are not available.

Black Level and White Level

The **black level** and **white level** values in the boxes allow the black and white values of the resultant clip to be changed from the specific levels in the source image.

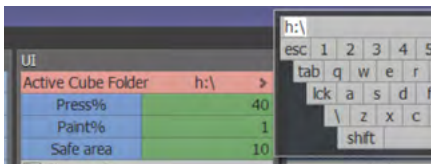
Look-up Table

The **lookup table** box allows selection of a previously configured look-up table to be applied to a file on import.

The previously configured look-up tables must be stored in a specified place – as determined by each organisation – for them to be accessible from in Quantel workspace.

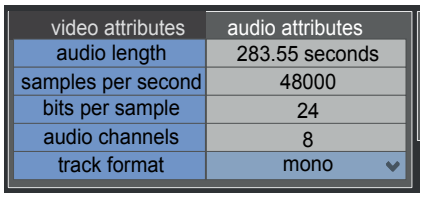
Look-up tables can be stored in one of the following places:

- locally in the '**C:\Data\User\Cubes**' folder or sub-folder. The '**C:\Data\User\Cubes**' folder is selected by default.
- in a shared folder on a network drive, eg '**\\shared\media\user**'.
- in a shared folder on a mapped network drive, eg '**h:**'.



The Active Cube Folder location on the Quantel kernel can be changed in the **UI** menu, in the <F1> Configuration Window.

Audio Attributes Menu



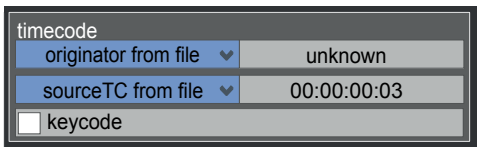
To view the audio attributes menu select the **audio attributes** tab to the right of the **video attributes** tab.

The first four attributes in the **audio attributes** menu (**audio length**, **samples per second**, **bits per sample** and **audio channels**) display the information from the source file. These cannot be changed.

Use the box to the right of **track format** to select a track type of **mono**, **stereo**, or **quad**.

See "Audio Track Output Mapping" on page 2-13.

Timecode Menu



Use the **timecode** menu to select where the originator and timecode are taken from.

Originator

The **originator** scroll box is used to determine the source for the originator timecode. Select **originator from file**, **originator from name** or **originator from path**.

The **originator from file** is the default and displays the file in the field on the right.

For **originator from name**, tick **with file extension** and set character limit in **limit** numeric box if required.

For **originator from path**, set directory level in the **level** numeric box and the character limit in the **limit** numeric box if required.

Source TC

With the **sourceTC** scroll box select between **sourceTC from file** or **sourceTC from name**.

Source TC from file is the default and allows a start timecode to be entered in the resultant clip.

Source TC from name interprets the trailing number as frame count.

Keycode

When the **keycode** box is ticked, select the film and perforation type. The keycode value can be adjusted by using the **prefix**, **feet** and **frame** boxes.

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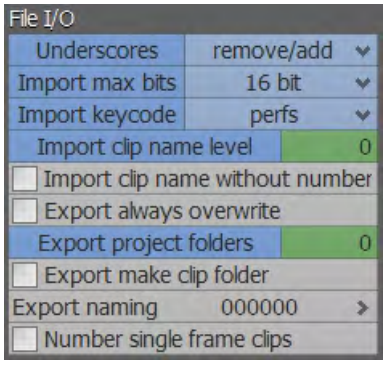
<F1> Options



Underscores

The **Underscores** box controls how file names are controlled during import and export.

If **remove/add** is selected:

- any underscores in the file names are replaced with spaces on import.
- any spaces in the file names are replaced with underscores on export.

If **ignore** is selected:

- underscores are not replaced on import or export.

Import Format

The **Import Format** box controls the format in which imported (or localised) video is stored. This is available only on systems unable to play RGB video. When **native** is selected, imported files are saved in their native format. When **yuv** is selected, imported files are converted to YUV colour space (this box also displays on Compass for importing video either using the native compression format, if any, or transcoding it to the output format).

Import Max Bits

The **Import max bits** box controls the maximum number of bits to be used to store imported video clips. This is available only on systems with Quantel hardware. The options are **10 bit** or **16 bit** (if the hardware supports it).

Import Keycode

The **Import keycode** box controls whether keycode within imported files is interpreted to represent **frames** or **perfs**. It is always stored and displayed in frames within the system.

Import Clip Name Level

If the **Import clip name level** box is set to **0** and a file is dropped into the **Import** menu or onto the desktop, the clip name is set to the file name without the file extension (if the file header does not contain its own name). If set to **n** (where n > 0), the clip name is set to the name of the directory **n** levels above the file.

Import Clip Name Without Number

When the **Import clip name without number** tick box is ticked, the number at the end of the file name is removed, together with spaces, hyphens and underscores that precede it.

Allow Non-server Sized Import (Qube and sQ Edit Plus HD)

When the **Allow non-server sized import box** is ticked, the **same as source** option is available in the **Convert to** menu in **Import**. This allows files that are larger than sQ server supported formats and/or are a non-standard format, ie neither HD or SD to be imported at their native format and colour space.

If the **Allow non-server sized import** box is not ticked, a file that is larger or different from an sQ server supported format has to be converted to a supported format selected from the **Convert to** menu or it cannot be imported.

When applying any effects to an imported file that is larger than sQ server supported formats, clear the history and add it to the timeline in order to publish it to the sQ Server. In this case, it's advisable to create two copies in the Clips Bin – with one retaining the history for future access.

Red Timecode

The RED camera records two different timecodes: **absolute** (time of day) and **edge** (starts from a fixed point for each magazine, eg 10:00:00:00). The **Red timecode** box should normally be set to **preferred**. This uses whatever was flagged at the time of shooting, but can be overridden by selecting **absolute** or **edge** if the incorrect code is being found in the files.

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Save Decode Parameters

Settings Bin Functions

From the **Import** menu, save RED, Phantom (CINE) and Cineform (AVI or MOV) file decode settings in the Settings Bin. They can then be transported by archiving them with a project.

To recall parameters, drag the setting from the bin into the file list area in the main window. Multiple items can be grouped together to have an import setting applied to them.

Supported Import Formats

Video clips (up to a maximum size of 4K) and audio clips can be imported in the formats listed below.

Not all formats may be available on the platform or workspace in use.

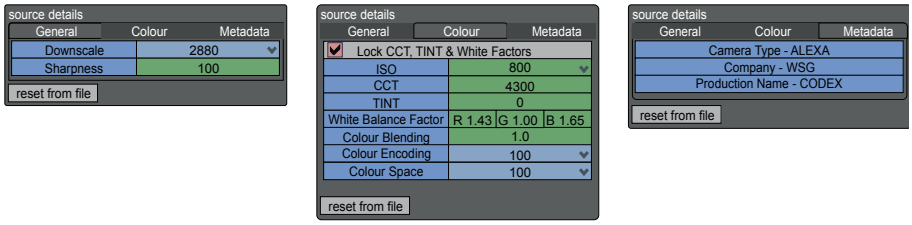
AIFF

The platform imports AIFF (Audio Interchange File Format) 24-bit, PCM (uncompressed) files.

ARRIRAW

The system imports ARRIRAW uncompressed 12-bit raw Bayer sensor data output from Arri Alexa cameras.

When one of these files is dropped into the **import** menu, a new menu with three tabs displays providing further options.



General tab	set the downscale using the scroll box, and the sharpness using the soft or hard keyboard.
Colour tab	set several colour settings including colour blending, encoding and space.
Metadata tab	for viewing the metadata of the file being imported.

All settings can be reset when the file is imported by pressing **reset from file** at the bottom-left of the **source details** menu.

AVI

Uncompressed: the platform imports uncompressed video and uncompressed 16-bit 48 kHz audio.

Compressed: if a suitable codec is installed on the platform (within the Windows operating environment) the system imports compressed video and decompresses it before storing it in the library. The system supports the import of AVI files larger than 4 GB.

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BMP

The platform imports Microsoft Windows bitmap images as 8-bit RGB clips.

CDA

The platform imports CD audio files. An audio file can be previewed and a segment of the file selected for import.

CIN

Logarithmic Cineon files are supported and can be imported, saved in their native logarithmic form.

The Cineon Utility within the Utility application can be used to convert Log format clips into linear data clips.

CINE (Phantom Camera)

Import of the native RAW file format produced by Vision Research's high speed Phantom camera is supported. The import of CINE format material provides the user with a clip preview on the desktop.

DPX

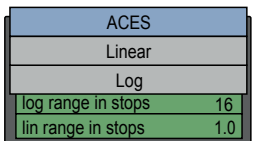
The platform imports a series of DPX files conforming to SMPTE 268M-1994 and imports them as video-only clips.

DV

Digital Video DV file formats can be imported using QuickTime, if it is available.

EXR

The platform supports the import of EXR files. When importing EXR files, the **source details** menu allows selection of a colour space: **raw**, **Rec709** and **P3**.



Choose a profile of **Linear**, **Log** or **ACES** using the scroll box in the source details box. **Linear** has an adjustable exposure scale. Selecting **ACES** allows the result to be viewed through one of the ACES viewing LUTs.

Select the **Log** profile to convert the data to a filmic log format. This allows the result to be viewed through one of the FilmLook log profiles or a custom LUT.

Both the ACES and Log profiles should be imported as 16-bit logarithmic data. Ensure I/O – Import max bits is set to 16-bit in the <F1> Configuration Window.

The **Linear** profile shows the raw data in the file.

GIF

The platform imports GIF (CompuServe Incorporated - Graphics Interchange Format) files that conform to the GIF87a and GIF89a standards. The animated GIF format is not supported.

Go-Pro

The platform supports Go-Pro H.264/MPEG 4 formats. This can also be soft-mounted.

JPEG

The platform imports a series of JPG files and records them as un-compressed video-only clips.

M2V (Blu-ray)

The platform imports MPEG video only files for Blu-ray.

MCF

The platform imports high speed video media from ARRI Tornado cameras from the native MCF format.

MOV (QuickTime)

QuickTime MOV files can be imported if QuickTime 7 is installed on the platform. QuickTime 7 supports the Apple ProRes codec. When a MOV file is imported, it is decompressed and saved in the library.

The file import process supports the import of QuickTime files with alpha channels. Clips or stills imported with alpha channels are shown in the Clips Bin with a red fill to indicate that they have a key channel.

When a file is detected as having been encoded with a codec which can support an Alpha channel, this is automatically made with an alpha channel unless the **ignore matte** box in the menu area is ticked.

QuickTime users should be aware of license requirements for various codecs.

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MPEG-1, MPEG-2, VOB (option)

The I/O Application supports the import of specific MPEG-1, MPEG-2 and VOB (DVD video object) files.

MPEG-1 files with the MPG extension (video with embedded audio channels) and with the following characteristics can be imported:

Video:	MPEG-1 constant bit rate Video CD - 352 × 288 or 352 × 240, Super VCD - 480 × 576 or 480 × 480
Audio:	MPEG Layer-2 16-bit mono or stereo

MPEG-2 files with the MPG extension (video with embedded audio channels) and with the following characteristics can be imported:

Video:	MPEG-2 variable or constant bit rate 500 bkit/s,1000 kbit/s, 2000 kbit/s, 3000 kbit/s, 4000 kbit/s, 5000 kbit/s, 6000 kbit/s, 7000 kbit/s, 8000 kbit/s, 9000 kbit/s or 10000 kbit/s. DVD Video (720 × 576 @ 25 FPS, 4:3 or 16:9) DVD Video (720 × 480 @ 29.98 FPS, 4:3 or 16:9) DVB (transport stream) MicroMV (transport stream) DVHS (transport stream) HDV (transport stream) ATSC (transport stream)
Aspect ratios:	4:3, 16:9 or 1:1
Audio:	MPEG Layer-2 16-bit mono or stereo, 48 kHz sample rate, audio at 96 kbit/s, 112 kbit/s, 128 bkit/s, 160 kbit/s, 192 kbit/s, 224 kbit/s, 256 kbit/s, 320 kbit/s or 384 kbit/s.

Multiplexed MPEG-2 and audio streams in VOB format with DVD type 5 compatible formats such as 720 × 567 @ 25 FPS, 4:3, 16:9 or 720 × 480 @ 29.98 FPS, 4:3, 16:9.

MP3

The platform imports MP3 files and stores them as audio-only clips.

MP4, M4V, MP4V, M4A, M4P

The above MPEG-4 part 14 file formats can be imported using the QuickTime SDK.

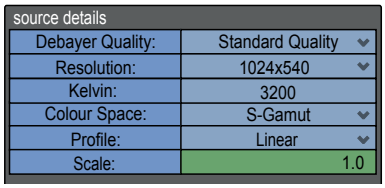
MXF

P2, XDCAM, DNxHD, SonyF65, Sony SStP and Quantel

All Panasonic P2 formats and Avid DNxHD formats are supported. The platform imports MXF files conforming to SMPTE 377M-2004 that use Operational Patterns Op1A and OpAtom, and have a supported media format. These file types can also be soft-mounted.

Sony F65 MXF

The platform supports the import of Sony F65 MXF files.



This data can be stored in log format and to assist with the precision, it should be at 16 bits. When one of these files is dropped into the **import** menu, a pop-up displays providing more options.

The Kelvin quality resolution has three available values including 5500 (classed as daylight setting), 4300 and 3200 (both classed as tungsten settings).

The box to the right of Colour Space allows selection of **S-Gamut**, **sRGB/rec-709, P3, XYZ** or **ACES**. Select a choice of profile curve – **Linear** or **S-Log2** – to be applied using the scroll box to the right of Profile. If **ACES** is selected for the **Colour Space**, the **Profile** must also be **ACES** for correct operation.

The scroll box to the right of **Profile** allows selection of: **Linear**, **S-Log2** or **ACES**. Linear present intensity data to the clip. This generally appears darker as the normal intensity range sets black to 512 and scene white to 5472 counts from a potential range of 65536 counts. To assist with this the scale tool is enabled to adjust the brightness of the image imported. **S-Log2** converts the input data into a film like density response. When colour correcting this material, the settings need to be adjusted so that DMin is 90 and DMax is 582. These settings can also be changed to new default settings in the <F1> Configuration Window. **ACES** converts the data to conform to Quantel ACES processing standard. This must be paired with **ACES** in **Colour Space** for correct operation. When colour correcting this material the settings need to be adjusted so that DMin is 143 and DMax is 494.

Sony SStP

Sony SStP files can also be imported. These use a MPEG4 codec. Supports resolutions: 720P, 1080i, 1080P and 2K. Three quality levels are supported: lite (225 MB), SQ (450 MB) and HQ (900 MB). Colour space can be RGB 444 or YUV 422.

PIC

The platform imports Softimage pic files as 8-bit RGB clips.

PNG

The platform imports PNG (Portable Network Graphics) format files of the following types:

1-bit, 2-bit, 4-bit, 8-bit or 16-bit greyscale;

3 × 8-bit RGB colour or 3 × 16-bit RGB colour;

1-bit, 2-bit, 4-bit or 8-bit palette colour;

8-bit (or 16-bit) greyscale + 8-bit (or 16-bit) alpha-channel;

3 × 8-bit (or 16-bit) RGB colour + 8-bit (or 16-bit) alpha-channel.

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RED (r3d)

The platform imports RED (r3d) raw image files. The check box in the **Import** menu (also available in the **Conform** menu) allows audio to be imported with the r3d file. The import of r3d material provides a clip preview on the desktop.

SGI

The platform imports a series of 8-bit or 16-bit Silicon Graphics SGI files and records them as video-only clips.

Silicon Imaging (SI-2K) Camera

Import of the CineForm RAW format is supported. The raw data is wrapped as either MOV or AVI files and can be decoded in the **Import** menu by using the various menu functions. The import of CineForm RAW material provides a clip preview on the desktop.

TARGA

The platform imports a series of 8-bit RGB Targa files and records them as video-only clips.

TIFF

The platform imports a series of 8-bit or 16-bit, RGB TIFF files and records them as video-only clips.

VPB

The platform imports a series of VPB files (Video Paintbox format) and records them as video-only clips.

WAV

The platform imports 48 kHz, 16-bit, 24-bit, or 32-bit, 1, 2 or 4 channel WAV files and stores them as audio-only clips.

If the file is not 48 kHz, it has to be 16-bit and have a maximum of two channels.

Windows Media (ASF, WMA, WMV)

The platform imports Windows Media 9 ASF files as well as Windows Media video (WMV) and audio (WMA) files if Windows Media 9 is installed on the system. When importing a file, it is decompressed and saved in the library.

Important Notice: Quantel provides the mechanism for creating Windows Media 9 files but Quantel does not give the installer or user the right to create and distribute these file types. The installer/end user must agree to the terms of use of Windows Media 9 license (displayed during installation) and ensure that they have the appropriate license to create and distribute files using the codecs provided.

Royalties may also be payable to different licensing authorities for the use of the codecs provided and payment of these royalties is the responsibility of the installer/end user and not Quantel. Please refer to Microsoft for licensing and royalty information.

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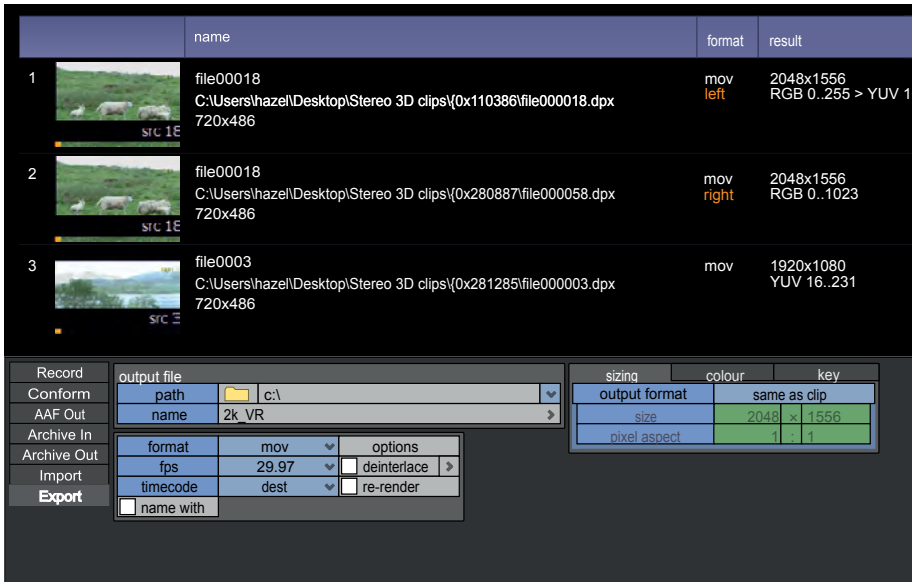
Export Material

Export Clips as Files

The **Export** menu is used to export any clip from the Clips Bin.

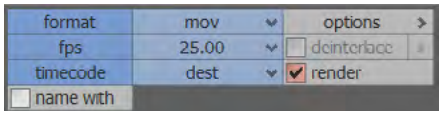


To export an existing clip as a sequentially numbered set of images or a single interleaved file:

1. Select the **Export** menu.
2. Open the Clips Bin by selecting **clips** on the Application Bar, and highlight the required clip(s) to be exported.
3. Drag and drop the clip(s) from the Clips Bin onto the desktop.
4. Select the required destination directory/folder by either pressing the folder icon then selecting a path (press <Ctrl> + the folder icon to access the Windows directory browser); or by typing a path in the text field; or by pressing the arrow box on the right to select a previously used path.
5. Enter the required name for the images using the **name** field.
6. Select the required output format for the exported files from the **format** scroll box then press **options**. A pop-up now displays with options relevant to this format. If required, set parameters here and in the **output file** and **sizing/colour/key** menus (described in the following sections).
7. Press **start export** and the clip is exported as a set of images or a single interleaved file (this depends on the selected export file format). When the **stop on error box** is ticked, all export files are stopped if an error occurs in one. If the box is not ticked, **Stop**, **restart** and **abort** options become available during import when an error occurs in a file but the import continues with any remaining files.

Render On Export

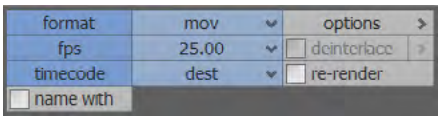
When dropping an unrendered clip onto the desktop in **Export**, a **render** box displays in the menu.



It is selected by default if the clip is unrendered. When the box is ticked, the clip is rendered during export. If the clip is unrendered and the box is not ticked, the clip cannot be exported.

In this instance, the following error message displays: 'error: Clip title needs rendering before export'.

When dropping a rendered clip onto the desktop in **Export**, a **re-render** box displays in the menu. It is unchecked by default.



If the box is ticked, the clip is re-rendered during export. If the box is not ticked, the clip is exported as it is.

Batch Export

Multiple clips can be dragged out of the Clips Bin onto the desktop in the **Export** menu where they form a list. The file type and network destination can then be set, and a batch export can be started.

Multiple clips can be selected as a group by using the <Shift> and <Ctrl> keys so that their attributes such as frame rate, export path or file format can be changed at the same time. Only the attributes changed on the active item ripple through the selection.

Name with Timecode, Frame or Original Suffix

The **timecode – source/dest** scroll box allows the clip's source or destination timecode to be selected for export. This affects the timecode embedded within the file and also how the file is named.

Tick the **name with** box to append the selected timecode to the file name. If **name with – timecode** is selected, the timecode is appended in the format 'hhmmssff.' If **name with – tc frame num** is selected, the timecode is appended as a frame count from midnight (where midnight is a zero start point).

When file sequences are imported without their suffix, it can be added if required on export. Tick **name with – original suffix** to do this. This is useful if a clip has been shortened, as the correct frame numbers can then be added on export.

Deinterlace

The **Deinterlace** tick box allows field 1, 2 or average deinterlace to be applied.

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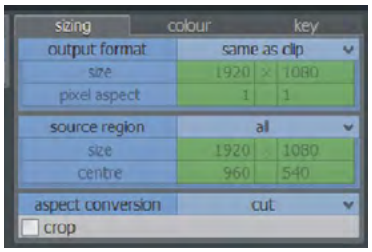
Sizing

When images are to be exported they can be resized, offset, and have their aspect ratio changed to suit the hardware or process that is being used to import them.



Select the **sizing** tab in the **Export** menu to reveal the following functions:

The **output format** box allows the target format of the clip or files to be selected from a list of default formats.

The values next to the **size** box set the size of the output image in pixels.

The values next to the **pixel aspect** box set the aspect ratio of the resultant pixels.

The **source region** scroll box allows selection of **all, custom** (use selected source region) or **pan & scan** (use pan and scan data from the clip, if present).

The **size** and **centre** boxes trim and reposition each frame to the value set in the green numeric boxes. The clip image in the main window updates as these settings are changed.

The **aspect conversion** box controls how the aspect ratio of frames is managed when the clip has mixed aspect ratio segments. When a 16:9 clip is output at 4:3 aspect ratio with the **cut** function enabled, the system resizes the 16:9 clip and crops the left and right edges of the image. With **box** enabled, the 16:9 clip is output in letter box form. When a 4:3 clip is output at 16:9 aspect ratio with the **cut** function enabled, the system crops the top and bottom edges of the image. With **box** enabled, the 4:3 clip is output as pillar box. With **none** selected, mixed aspect ratio segments are stretched to fit.

The **output crop** box is used to crop each frame on output. The options for this are to crop by **ratio**, **picture area**, or **none** (no crop). Select the required option from the blue scroll box.

Some of the commonly used **ratio** values are effectively film camera aperture aspect ratios that define the active area of the film are, and others are television standards:

1.33 (4:3) - SD video

1.66 - 35 mm Academy Offset Standard

1.78 (16:9) - HD video

1.85 - 35 mm Full Screen Super

2.35 - 35 mm Academy Offset CinemaScope

2.37 (21:9) - True ratio 64:27 - often used as a best fit between Cinemascope (2.35) and 35 mm Anamorphic (2.40)

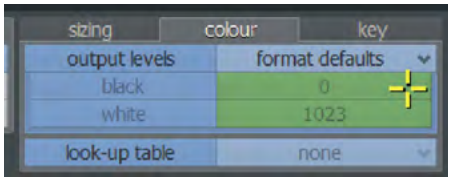
To crop by **picture area**, determine a point of origin from the top left of the picture, and then define the required (x × y) pixel length of the picture.

Export Files with Pan & Scan

The **pan & scan zoom** and **offset** values set-up on a clip in the Edit Application can be applied when a clip is exported using the I/O Application. The pan & scan settings can be previewed in the I/O Application but cannot be seen during the export process.

To see which part of the image is to be exported, refer to the browse image in the list at the top of the screen.

Colour



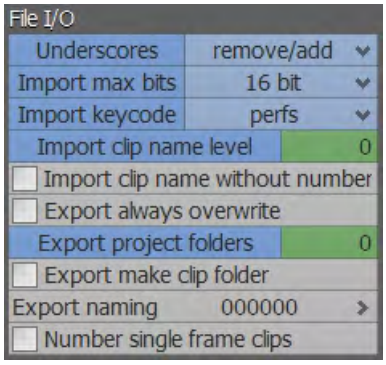
From the **colour** tab's **output levels** scroll box, select **format defaults**, **same as clip** or **custom** to affect the black/white level values below. Choose **custom** to amend these values manually.

The box to the right of the **look-up table** box allows the selected look-up table to be applied to the clip or frame as it is exported.

Key

The **key** tab allows a key to be included by ticking the **include key** box.

<F1> Options



Underscores

The **Underscores** box controls how file names are controlled during import and export.

If **remove/add** is selected:

- any underscores in the file names are replaced with spaces on import.
- any spaces in the file names are replaced with underscores on export.

If **ignore** is selected:

- underscores are not replaced on import or export.

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Export Always Overwrite

When **Export always overwrite** is ticked, exporting a file of any type overwrites an existing file of the same name. This affects CIN, DPX, TIF and VPB files. Other file types always overwrite anyway. An archive process never overwrites.

Export Project Folders

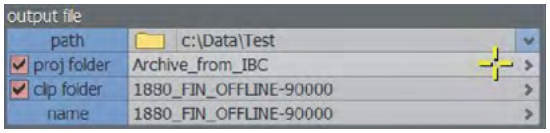
Use the **Export project folders** numeric box to specify the number of Clips Bin project folders to include in the export path.

If set to 0, it behaves as before. If set to 1, it includes the folder containing the clip in the export path. If set to 2, it also includes the folder above that, etc.

If the setting is changed, drop the clips into the menu again to use the new value.

Export Make Clip Folder

If **Export make clip folder** is ticked and a clip is then dropped on the desktop, the export directory is set to the path of the previously selected item but with the clip name as the lowest level directory.



Therefore the export path can consist of **export directory\selected folders\clip name\file name**.

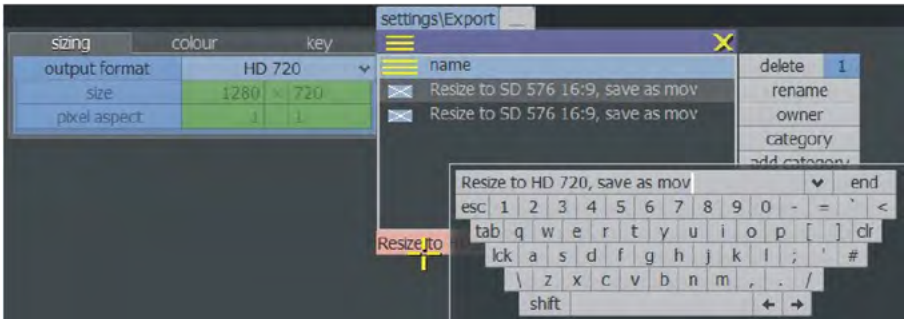
Export Naming

The **Export naming** field allows a name and incremental number sequence to be added to the filename of files being exported. The number entered here defines the starting value for the exported frame sequence.

Save Export Parameters

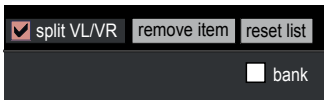
Settings Bin Functions

File export settings can be saved in the Settings Bin. These include file path name, format, timecode, options, sizing, colour and key settings.

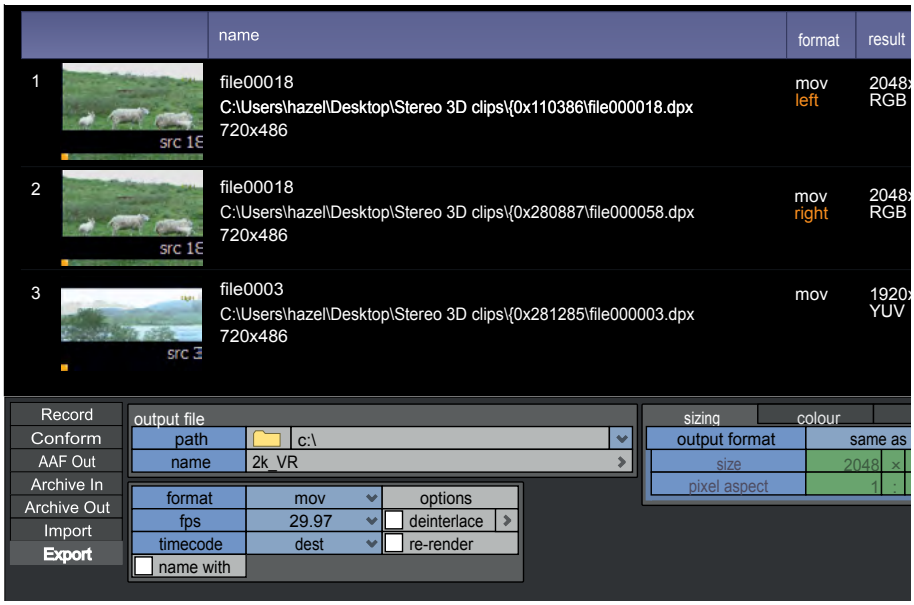


To recall settings, drag and drop the setting from the bin onto the selected clip(s) in the main window. Any existing export presets from previous software versions are converted to 'settings' on initial start-up of the new software.

Stereo3D Export



Stereo3D clips can be exported as separate file sequences with VL and VR tags by ticking the **split VL/VR** box on the right of the menu (this is the default state).



If **split VL/VR** is selected, the stereo clip is split into left/right eye clips; one with a VL tag and the other with a VR tag. By selecting the **clip folder** and **proj folder** tick boxes in the <F1> Configuration Window, the separate left and right eye clips are placed into their corresponding folders.

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Supported Export Formats

The following export formats are available within **Export**. To access the relevant options for each format, select the required format from the scroll list and press options.

Not all formats may be available on the platform or workspace in use.

AVI

Uncompressed: if **none** is selected in the **codecs** box, the platform produces uncompressed video and uncompressed audio (48 kHz; 16-bit; 2 channels).

Compressed: if a codec other than **none** is selected, the video is compressed using that codec. Additional codecs can be installed on the platform via the operating system.

CIN

Logarithmic Cineon files are supported and can be imported, saved in their native logarithmic form.

The Cineon Utility within the Utility application allows linear data to be converted into Cineon Log data that can be exported using the CIN function.

DPX

The platform exports video-only clips as a series of DPX files conforming to SMPTE 268M-1994.

JPEG

The platform exports video-only clips as a series of JPEG files. The quality of JPEG exports can be adjusted between 1 and 100 in the **options** box; the default is 75.

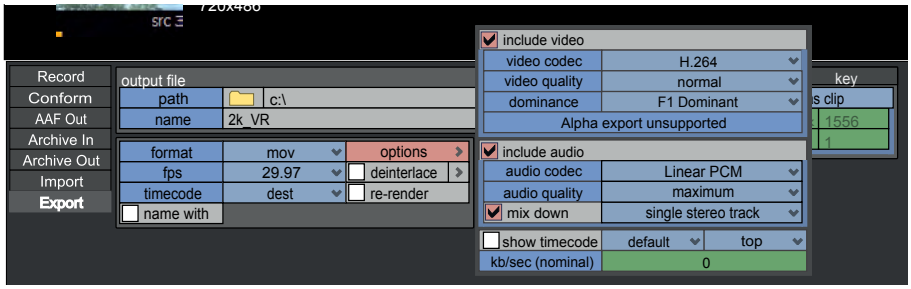
MOV

Windows QuickTime MOV files can be exported if QuickTime 7 is installed on the platform.

Important Notice: Quantel provides the mechanism for creating QuickTime MOV files but Quantel does not give the installer or user the right to create and distribute these file types.

MOV Menu

Select **mov** from the scroll list and press **options**.



The **include audio** and **include video** boxes allow video + audio, video only or audio only to be selected for export.

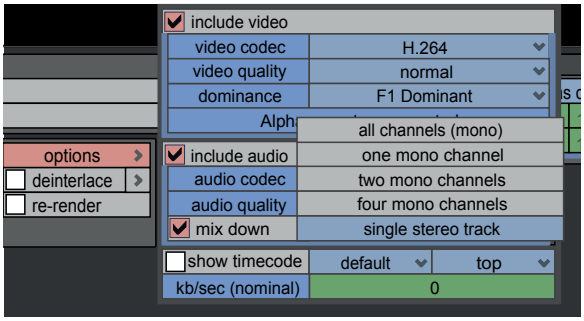
The **video codec** box allows an appropriate codec to be selected from those installed within the Windows operating environment. If Alpha channel (key channel) is supported by the codec, the message 'Alpha export supported' displays. This indicates Alpha channel capability regardless of whether the clip being exported has a key channel or not.

The **video quality** box affects the quality of the resultant video. This value affects the sharpness of the resultant video.

Select either the first field or the second field to be dominant in each frame of the export file by selecting **F1** or **F2** in the scroll box to the right of dominance.

The box to the right of **audio codec** allows selection of an audio codec for export such as Linear PCM, AAC and Apple Lossless.

The box to the right of audio quality allows quality selection: **minimum**, **low**, **medium**, **high** or **maximum**.



Tick the **mix down** box to export the file with selected audio output patching. The box to the right of **mix down** allows selection of how many channels should be included in the export file (as separate mono tracks or a single stereo track).

If mix down is not selected, any audio output patching made on the timeline is ignored on export.

The **show timecode** tick box allows a QuickTime movie to be created with embedded timecode. To the right of this box, the style (in the first scroll box), and position (in the second scroll box) of the timecode display in the QuickTime player can be changed. Set the style to **default, white on black,** or **black on white;** and the position to **top, bottom** or **below.**

To allow the QuickTime files to be imported correctly into other applications, the aspect ratio of the exported clip needs to manually defined. To do this, close options and press the sizing tab on the Export desktop.

See "Export Material" on page 6-17.

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There are three deinterlace options on MPG, MOV and WMV files; tick the deinterlace box then select either field 1, field 2 or field average from the box on the right.

Windows QuickTime MOV files can be exported if QuickTime 7 is installed on the platform.

Important Notice: Quantel provides the mechanism for creating QuickTime MOV files but Quantel does not give the installer or user the right to create and distribute these file types. The installer/end user must agree to the terms of use of QuickTime license (displayed during installation) and ensure that they have the appropriate license to create and distribute files using the codecs provided.

Royalties may also be payable to different licencing authorities for the use of the codecs provided and payment of these royalties is the responsibility of the installer/end user and not Quantel. Please refer to Apple for licensing and royalty information.

MPEG-2 (option)

With an appropriate password/license installed, the application supports the export of specific MPEG-2 format files (MPG). This function is aimed primarily at the creation of material for approval purposes but can also be used in the pre-production of DVDs using DVD authoring packages.

MPEG-2 Option Notice: As a condition of the MPEG-2 Intermediate Product license granted to Quantel the following notice must be given to the end-user of this product:

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The MPEG-2 files are created with the MPG extension (video with embedded stereo audio channels) with the following characteristics:

Video: Constant bit rate: 1 Mbit/s, 2 Mbit/s, 3 Mbit/s, 4 Mbit/s, 5 Mbit/s, 6 Mbit/s, 7 Mbit/s, 8 Mbit/s, 9 Mbit/s, 10 Mbit/s, 15 Mbit/s or 20 Mbit/s. GOP (group of pictures) 15.

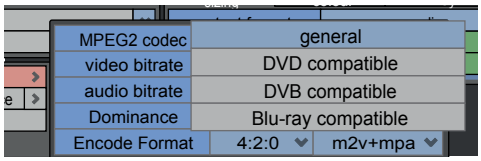
Format: the size, frame rate and interlaced/ progressive settings used are those of the clip itself.

Aspect ratio: as defined by the currently selected video output format (4:3, 16:9 or 1:1).

Audio: MPEG Layer-2 16-bit mono or stereo, 48 kHz sample rate, audio at 96 kbit/s, 112 kbit/s, 128 kbit/s, 160 kbit/s, 192 kbit/s, 224 kbit/s, 256 kbit/s, 320 kbit/s or 384 kbit/s.
Internal Audio Tracks mixed down to stereo channels 1 and 2 in the embedded audio.

The export process can create MPEG-2 files of a number of video formats. Some of these may not be actual transmittable standards or be directly compatible with other systems (such as those used in the production of DVD) that require specific video formats.

MPEG-2 Menu



The scroll list to the right of the **MPEG2 Codec** box allows **general**, **DVD compatible**, **DVB compatible** or **Blu-ray compatible** data streams to be selected.

General Program Stream

With **general** selected, video clips of any format can be encoded as an MPEG-2 Program stream with any video and audio bit rate settings.

DVD Compatible Program Stream

With **DVD compatible** selected, video clips of the following types can be encoded as MPEG-2 Program streams for use with DVD type 5:

PAL - 720 × 567 @ 25 FPS, 4:3 or 16:9
PAL - 704 × 576 @ 25 FPS, 4:3 or 16:9

NTSC - 720 × 480 @ 29.98 FPS, 4:3 or 16:9
NTSC - 704 × 480 @ 29.98 FPS, 4:3 or 16:9

If any other video format clip is exported with DVD compliant selected the process fails.

When exporting MPEG-2 files for DVD production the maximum video bit rate used should be 8000 kbit/s and the minimum audio bit rate should be 192 kbit/s.

If the appropriate MPEG-2 settings are used for exporting (ie the same settings as the final DVD) the DVD authoring process does not need to re-compress the MPEG stream. This reduces the time taken to author the DVD and maintain the highest video quality.

DVB Compatible Transport Stream

With **DVB compatible** selected, video clips of any format can be encoded as an MPEG-2 Transport stream, with any video and audio bit rate settings.

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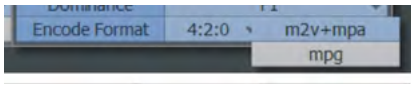
Blu-ray Compatible Transport Stream (M2V+MPA, MPG)

With **Blu-ray compatible** selected, video clips of any format can be encoded as an MPEG-2 Transport stream with any forced field dominance and video/audio bit rate settings applied.

The first **Encode Format** scroll box can be set to either **4:2:0** or **4:2:2**.



The second **Encode Format** scroll box can be set to generate either **m2v+mpa** (required for DVD Studio Pro) or **mpg** files.

MXF

The platform exports MXF files conforming to SMPTE 377M-2004 that use Operational Pattern Op 1A.

MXF wrapped DNxHD files

When exporting a clip of this format, a folder is created containing the mxf wrapped DNxHD essence, an aaf and xml descriptor files.

If a folder has been previously created and an attempt is made to re-export the clip, a file export error message displays and the export is not completed. An existing folder must be deleted before re-exporting as it cannot be overwritten.

The mxf file can then be placed in the Avid media folder and the aaf file dragged into the Avid clips bin to make the clip available.

PNG

The platform exports video frames as PNG (Portable Network Graphics) format.

SGI

The platform exports video-only clips as a series of 8-bit or 16-bit Silicon Graphics SGI files.

TARGA

The platform exports video-only clips as a series of 8-bit RGB Targa (TGA) files.

TIFF

The platform exports video-only clips as a series of 8-bit or 16-bit RGB TIFF files.

VPB

The platform exports video-only clips as a series of Quantel proprietary VPB files (Video Paintbox format). This format can be opened directly by Quantel standard definition video products.

VPB/WAV/INFO

The platform exports clips as a series of VPB video files, WAV audio files and a file containing clip metadata. This can be used to export clips to other Quantel equipment that supports this kind of media exchange.

WAV

The platform exports audio-only clips as a single 48 kHz, 24-bit or 16-bit, 1, 2 or 4 channel WAV file.

When exporting a clip with audio as a WAV file, choose the audio tracks to be exported. Press **mix down** and choose from **mono**, **stereo** or **quad** to mix down the audio.

Windows Media (WMA, WMV)

The platform exports Windows Media 9 compressed video (WMV) and audio (WMA) files if Windows Media 9 is installed on the system.

Important Notice: Quantel provides the mechanism for creating Windows Media 9 files but Quantel does not give the installer or user the right to create and distribute these file types.

The installer/end user must agree to the terms of use of Windows Media 9 license (displayed during installation) and ensure that they have the appropriate license to create and distribute files using the codecs provided. Royalties may also be payable to different licensing authorities for the use of the codecs provided and payment of these royalties is the responsibility of the installer/end user and not Quantel. Please refer to Microsoft for licensing and royalty information.

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WMV/WMA Menu

- Select **wmv** from the scroll list and press **options**:

The **video codec** box allows an appropriate video codec to be selected from those installed within the Windows operating environment. The green box below allows the video bit rate to be set in kilobits per second. The **recommend** box automatically calculates the appropriate bit rate to be used.

The **audio codec** box allows an appropriate audio codec to be selected from those installed within the Windows operating environment.

The **audio format** box allows an appropriate audio sample rate to be selected for the exported audio.

The **quality** box affects the quality of the resultant video. This value affects the sharpness of the resultant video.

The **KF** box sets the video keyframe rate (this is equivalent to an I-frame and determines how often the whole video frame is sent in the data). This value affects the size of the resultant video component of the wmv file and the quality of playback in Windows Media Player. If a low value is selected with a low video bit rate then frames may be lost.

The overall quality and the size of the resultant .asf file is determined by the type of material being exported, the video and audio codecs selected and their settings.

There are three deinterlace options on MPG, MOV and WMV files; tick the deinterlace box then select either field 1, field 2 or field average from the box on the right.

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Appendix

About This Manual

This guide covers software available on some Quantel stand-alone and server-connected systems. It may cover functions or options not available on the system you are using.

This guide was written and published by Quantel. The bottom of each page displays the guide's reference number, eg **2140-57-xxx** plus a revision letter, eg **B** (B being more recent than A which is the original). The publish date is also indicated in the format **mm/yy**. If you require hard copies of this guide, always quote the reference number, revision letter and title.

2140-57-012 revision	**publish date**	*ECO (Quantel use only)*	**software version**
A	03/11	E44203	5.0
B	11/12	E44770	5.2
C	**09/13**	**E45394**	**5.3**

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Notices

Maintenance

WARNING (WM2) SERVICE PERSONNEL – MAINTENANCE AND CALIBRATION WITHIN THE EQUIPMENT ENCLOSURE IS ONLY TO BE CARRIED OUT BY SERVICE PERSONNEL (12/97)

Conventions Used

Symbols

See: Reference to other items in this document or in other documents.

Notes: System, software and workflow points to consider and remember.

Tips: Useful hints and advice when undertaking tasks.

Information: Additional hardware or software information which may be useful.

Cautions: Indicate possible damage to (or misalignment of) the equipment if the indicated statements are ignored or the indicated procedures are not followed correctly.

WARNINGS: INDICATE DANGER TO LIFE AND LIMB IF THE INDICATED STATEMENTS ARE IGNORED, OR THE INDICATED PROCEDURES ARE NOT FOLLOWED CORRECTLY.

Text

<Text> indicates a specific key press on the QWERTY keyboard.

NN/nn indicates a value entered on a numeric keypad.

Text/text indicates either a Quantel application menu function or a Windows/Quantel installation/system setting.

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This manual is not product specific and may detail features that are not available on all systems.

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email 24hour.support@quantel.com

Website and Downloads (manuals, drivers, plugins and software)

http://www.quantel.com go to support–downloads (login required)

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Appendix

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